192 PAGES

AUGUST 1986 $2.00 U.S./$2.25 CAN:

SCIENCE FICTION analog

SCIENCE FACT

J. BRIAN CLARKE
Intent of Mercy

VERNOR VINGE

JAMES E. OBERG

08
02028
0 387168

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The dramatic conclusion of the DIADEM saga!

"Rousing adventure with unusually vivid, convincing detail."
—*Publishers Weekly*

Across the years and through endless star systems, Aleytys had searched for her mother Shareem and for her long-denied heritage. But now, at the moment of their triumphant reunion, Aleytys faced her deadliest challenge. For awaiting her was Kell, mastermind of treachery, who held an entire planet hostage in fear, and who would not rest until he'd destroyed Aleytys and any who dared to help her...

"Aleytys is an independent woman, strong-willed and competent, the total heroine."
—*Analog*

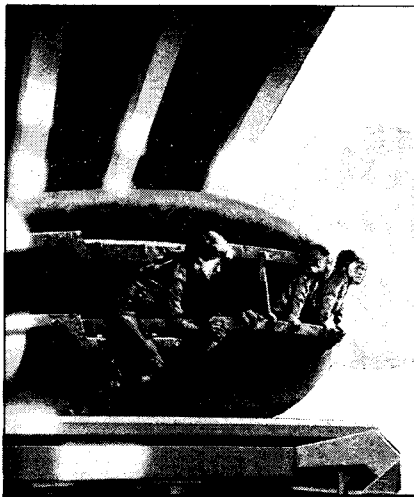
$3.50

JO CLAYTON

QUESTER'S ENDGAME

DAW
SCIENCE FICTION

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



GOING TO SEE THE END OF THE SKY

William John Watkins

AN OUTSTANDING NOVEL ABOUT A RITE OF PASSAGE, FROM THE AUTHOR OF *THE CENTRIFUGAL RICKSHAW DANCER*

On Catchcage, first of the LeGrange space habitats, Going to See the End of the Sky is a necessary ritual for those entering adulthood. Risking the ore pod journey through vacuum to a terrifying encounter with death leads to one of two fates: victory, and a lifetime of unique and widespread power. . .or defeat, and a future as a wandering lunatic-saint—*if* one survives at all. Yet taking the pods to the End of the Sky takes on a whole new meaning for three special Catchcagers: Beyar, and twins Push and Chancey. Will the shocking outcome of their ritual ride sow the seeds of interstellar revolution?

0-445-20200-9/$3.50
(In Canada: 0-445-20201-7/$4.50)

Questar

Science Fiction/Science Fantasy

POPULAR LIBRARY

AT BOOKSTORES EVERYWHERE

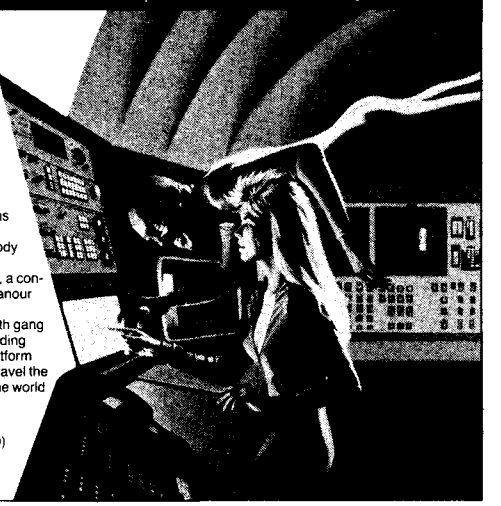
SPIDER PLAY

Lee Killough

HUGO AWARD NOMINEE LEE KILLOUGH CREATES A GRIPPING FUTURE-WORLD POLICE PROCEDURAL IN THE TRADITION OF *THE DOPPELGANGER GAMBIT.*

Law enforcement partners Sergeant Janna Brill and "Mama" Maxwell take on what at first seems to be a routine vehicle theft. But when the stolen hearse and the body in it turn up horribly mutilated, the evidence keeps pointing to Spider, a construction-making miracle on the Lanour Space Platform. Brill and Maxwell embark on a twisted trail from Earth gang wars to corporate killer armies, ending with a journey out to the space platform itself. Yet will Brill and Maxwell unravel the mystery before the very base of the world economy is utterly destroyed?

0-445-20273-4/$3.50
(In Canada: 0-445-20274-2/$4.50)



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

108 82 60

Vol. CVI No. 8
August 1986

Next Issue On Sale
July 15, 1986

$19.50 per year in U.S.A.
$2.00 per copy in U.S.A.

Serial

MAROONED IN REAL TIME, Vernor Vinge, Conclusion ____ 108

Novelettes

INTENT OF MERCY, J. Brian Clarke ____ 10
ABCs IN ZERO-G, Elizabeth N. Moon ____ 82

Science Fact

SHUTTLE DOWN: FICTION TO FACT, James E. Oberg ____ 52

Short Stories

CULTURAL EXCHANGE, L.A. Taylor ____ 60
HOOKED ON CLIPS, W.R. Thompson ____ 76
STATION 2152, Jack Wodhams ____ 160

Reader's Departments

THE EDITOR'S PAGE ____ 4
BIOLOG, Jay Kay Klein ____ 51
THE ALTERNATE VIEW, G. Harry Stine ____ 73
ON GAMING, Matthew J. Costello ____ 81
IN TIMES TO COME ____ 174
THE REFERENCE LIBRARY, Tom Easton ____ 175
BRASS TACKS ____ 184
THE ANALOG CALENDAR OF UPCOMING EVENTS ____ 192

Cover by Bob Walters

Joel Davis, President & Publisher

William F. Battista, Associate Publisher

Stanley Schmidt
Editor

Shelley Frier
Associate Editor

Indicia on Page 6

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Editorial

AH, SWEET MISREMEBERED YOUTH!

Stanley Schmidt

Once upon a time there was a little town in the midst of a sea of fertile farmland. It had a downtown—not a big one, to be sure, or truly bustling, by cosmic standards; but a central district where a few main highways came together and townsfolk and farmers from the surrounding countryside converged to do business. One day this town decided to make all its downtown streets one-way —and many onlookers, both residents and outsiders passing through, wondered why. It didn't seem to them that the actual volume of traffic required such action, and in fact the resulting confusion seemed more of a headache than the "congestion" the new arrangement was supposed to alleviate. Some of these perplexed observers thought the matter over at some length, and the best explanation they could come up with for a tranquil little town's making its streets one-way was this. Much as a little girl might like to dress up in her mother's clothes because it makes her feel "like a big girl," a little city might adopt big-city traffic patterns to make itself feel like a big city.

A bit far-fetched, you may say, but several years later I still haven't heard a better explanation. Admittedly such analogies between the behavior of individual organisms and that of social units are imperfect, at best. There are such obvious differences as the fact that the decision to make streets one-way was made by a few individuals, not by the town as a whole (though that difference may not be as great as it appears, since the little girl's decision to dress up was made by a similarly small group

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

of her cells). In any case, there are also clear similarities in the behaviors of organisms at individual and group levels. It can be at least mildly entertaining, and perhaps even instructive, to look at what they are.

The one I'm particularly thinking about today concerns a common tendency among adults which you've probably noticed in others and very likely exhibited at least occasionally yourself. How often have you heard an adult beset by some problem like taxes or work pressures or family responsibilities sigh nostalgically that he wishes he were back in his childhood, without any worries? I've heard it often—and I've always considered it a clear sign that that adult's memory of childhood is, at best, exceedingly vague. Any child could remind you that childhood is anything but carefree. Every day is filled with concerns like what's-my-teacher-going-to-do-to-me-if-I-forgot-my-book-report and is-that-bully-going-to-catch-me-on-the-way-to-school and am-I-growing-up-the-way-I-should and why-don't-boys-like-me.

"Ah," the adult smiles wistfully, "but those are such *trivial* problems compared to mine!"

To which I reply, with all possible respect, hogwash. The measure of a problem is not how big it is compared to somebody else's, but how big it is compared to your own perception of your ability to solve it. In those terms, a child's problems are not one whit less formidable than an adult's, and they may even be far more so. (Especially when you consider that the current crop of children are exposed to an unprecedented amount of information about current events and are well aware that many adult problems directly affect them, but are completely beyond their control.) A child's problems may loom large primarily because he lacks the perspective to accurately judge their real seriousness. If he's lucky, by adulthood he will be able to evaluate them more realistically and thus be less likely to let his worries get out of proportion to their causes (though many adults, alas, are not that lucky).

The cultural analog of nostalgia for personal youth is probably obvious: the "good old days" syndrome, the longing for the dear departed days when society and life were simpler, clean and wholesome and less hurried. (If you're subject to that feeling yourself, you might do well to take another look at G. Harry Stine's March 1984 Alternate View column, "Memory and Perspective.") It's hard to pick up a newspaper without being bombarded with news articles and opinion pieces about all the unprecedented problems we face in our present world. You could easily get the impression that the world has suddenly sprouted a whole slew of problems that are orders of magnitude beyond anything our ancestors ever faced, and that the problem of survival has become too huge to allow any more hope. There are plenty of people who believe just that; there are religious groups who carry it a step further and warn us that we are being Punished for our Sins, or that we are clearly entering the End of the World as foreseen by their particular prophets.

Skipping lightly over the abysmally low potential of such talk and attitudes for *solving* anything, I ask simply: are

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

we really in such an unprecedentedly rotten fix? Or are we just experiencing (as people have throughout history) the cultural counterpart of the man who doesn't know how he's going to pay his bills and wishes he were back in the carefree days of childhood (conveniently forgetting the bullies and things that went bump in the night)?

Personally, I suspect more of the latter than the former. I also think that that diagnosis holds a lot more hope for the future—because if we can retain (or regain) enough perspective to remember that we've surmounted plenty of "insurmountable" problems before, maybe we can divert enough energy from moping over the present crop to figure out some solution to them, too.

No, I'm not going to play ostrich and deny that we have some pretty big problems, or even that some of them actually have some genuinely novel aspects. Sure, we have population problems, and a nuclear Sword of Damocles, and an unhealthy fad of terrorism. We have

STANLEY SCHMIDT ..... Editor
SHELLEY FRIER ..... Associate Editor
TINA LEE ..... Editorial Assistant
RALPH RUBINO ..... Corporate Art Director
GERARD HAWKINS ..... Associate Art Director
RON KULINER ..... Senior Art Designer
SHEILA SMITH ..... Art Assistant
CARL BARTEE ..... Director of Manufacturing
CAROLE DIXON ..... Production Manager
VALERIE BARTLETT ..... Production Assistant
CYNTHIA MANSON ..... Director, Subsidiary Rights
FLORENCE B. EICHIN ..... Manager, Contracts & Permissions
VEENA RAGHAVAN ..... Public Relations Promotions Manager
LOUISE MUGAR ... Circulation Director/ Retail Marketing
JAMES R. CAULKINS ..... Circulation Planning Director
PRISCILLA GARSTON ..... Circulation Director/ Subscriptions
CHRIS DORBANDT ... Newsstand Operations Manager
WILLIAM F. BATTISTA ..... Advertising Director
JAMIE FILLON ..... Advertising Manager

JOEL DAVIS
President & Publisher

LEONARD F. PINTO
Vice President & General Manager

PAULA COLLINS
Vice President Circulation

FRED EDINGER
Vice President Finance

ADVERTISING OFFICES
NEW YORK
(212) 557-9100

Analog Science Fiction/Science Fact is published 13 times annually by Davis Publications, Inc. at $2.00 a copy in U.S.A., $2.25 in Canada. Annual subscription $19.50 in the U.S.A. and possessions, in all other countries, $24.20 payable in advance in U.S. funds. First copy of new subscription will be mailed within eight weeks of receipt of order. When reporting change of address allow 6 to 8 weeks and give new address as well as the old address as it appears on the last label. Second-class postage paid at New York, NY, and at additional mailing office. Canadian 3rd class postage paid at Windsor, Ontario.

© 1986 by Davis Publications, Inc., all rights reserved. Protection secured under the Universal Copyright Convention. Reproduction or use of editorial or pictorial content in any manner without express permission is prohibited. All stories in this magazine are fiction. No actual persons are designated by name or character. Any similarity is coincidental. Printed in U.S.A. All submissions must be accompanied by stamped self-addressed envelope; the publisher assumes no responsibility for unsolicited manuscripts or artwork.

POSTMASTER: SEND FORM 3579 to ANALOG SCIENCE FICTION/SCIENCE FACT, P.O. BOX 1936, MARION, OH 43306
IN CANADA RETURN TO 628 MONMOUTH ROAD, WINDSOR, ONTARIO N8Y 3L1
Editorial and Advertising: Analog Science Fiction/Science Fact, 380 Lexington Avenue, New York, NY 10017
Subscriptions: Analog Science Fiction/Science Fact, P.O. Box 1936, Marion, OH 43306 ISSN 0161-9328
call (614) 383-3141 for problems with your subscription.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

SYLVIA PORTER'S PERSONAL FINANCIAL PLANNER DOES MORE THAN MANAGE YOUR MONEY

IT PLANS YOUR FINANCIAL FUTURE TOO

Sylvia Porter, and the editors of Sylvia Porter's Personal Finance Magazine, now combine with all the computer tools you'll ever need to help manage your money on a day-to-day basis and plan your financial future, too. In Sylvia Porter's style, without complicated financial jargon or "computerese".

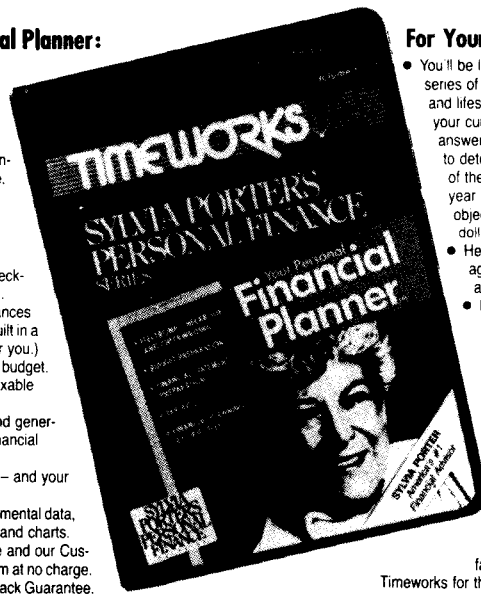
Volume I

Your Personal Financial Planner:

Helps you track your day-to-day financial data, then combines this information with your future financial objectives to produce the most comprehensive and easily-understood financial planning program available.

For Your Day-to-Day Affairs:

- Maintains your electronic checkbook and credit card system.
- Writes your checks and balances your checkbook. (We even built in a calculator and memo pad for you.)
- Prepares and monitors your budget.
- Classifies and tracks your taxable income and expenses.
- Calculates your net worth and generates customized personal financial statements.
- Tracks your financial assets – and your insurance policies.
- Graphically generates supplemental data, such as percentages, ratios and charts.
- You get our Toll-Free Hotline and our Customer Technical Support Team at no charge.
- You get Timeworks' Money Back Guarantee. (Details in each package.)



For Your Financial Future:

- You'll be led step-by-step through a series of questions regarding your life and lifestyle, your financial goals, and your current financial condition. Your answers will enable a computer to determine and print a summary of the amounts you must save each year to meet your financial objectives - in both real and inflated dollars.
- Helps you plan for protection against major medical adversities and other financial setbacks.
- Each program interfaces with others in this series. Your information can be incorporated into letters and reports produced by Timeworks' Word Writer.
- Everything is integrated. You need to enter data only once.

Available for Apple, IBM and Commodore computers.

Moderately Priced - from your favorite Dealer or contact Timeworks for the Dealer closest to you.

Next in this integrated series:
Your Personal Investment Manager.

Other Timeworks Programs: The Evelyn Wood Dynamic Reader • Word Writer with Spell Checker • Data Manager 2 • SwiftCalc with Sideways • Business Systems • Swiftax • Cave of the Word Wizard • Wall Street

TIMEWORKS®

More power for your dollar.

TIMEWORKS, INC., 444 Lake Cook Rd., Deerfield, IL 60015, 312-948-9200

© 1984 Sylvia Porter's Personal Finance Magazine Co. & Timeworks, Inc. All rights reserved.

From America's #1 Financial Adviser

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

hunger and drug abuse, AIDS and epidemic fear. . . . Just as any adult has problems he never had to think about as a child, we have problems our ancestors didn't. But don't forget the corollary: the adult also has abilities and resources and experiences the child didn't have for *solving* his problem. So do we, as a culture. As a culture, we can be like the adults who let themselves be overwhelmed by worry and give up *trying* to solve anything—or we can be like the ones who remember what their early problems looked like *then* and thereby retain enough perspective to keep plugging away at their current ones.

This, too, has a corollary, which we'd be wise to remember if we're lucky to follow the latter tack and plot a successful course through the current crop of problems. *These are not the last.* There will be others beyond, and quite likely some of them will seem bigger than any we have faced before. But if we can remember that the *reason* they seem bigger is the same reason that ours do now—and that our ancestors' did to them, so many times before—there's a reasonable hope that those, too, will be soluble. So far I've likened present civilization to adulthood and the "good old days" to childhood. But that's all relative. If civilizations actually have a predictable succession of states that correspond clearly to distinct stages of individual development, we're not yet in a position to know that. I'm guessing that a few hundred years from now our present civilization will look like just a slightly later stage of childhood, and both our present problems and our present abilities to deal with them will look as small and quaint as a child's have always looked to adults.

Sometimes it's heartening to remember that new problems *always* look very difficult—*until* you've learned how to solve them. Once you've mastered the method, the new problem becomes an old problem, and its solution becomes a routine to be applied casually as needed.

While you turn your creative energies to whatever has replaced it as a new and seemingly insurmountable challenge.

A long time ago, in my first couple of years of reading science fiction, I read a short story which left an indelible impression, directly pertinent to this discussion. I don't remember its title, or who wrote it, or what anthology I read it in, or even exactly what it was about (though I seem to dimly recall that its protagonist was a movie projectionist). But I doubt that I'll ever forget its theme, which one of its characters put into words something like these: "Security is in the past." The only security people think they remember, either in their own lives or in the history of the societies they live in, lies in childhood and bygone eras—not because things were really more secure than, but because *whatever problems they faced then, they have already survived.* By living through them, they have *proved* those problems capable of being overcome. They have not yet done that for the problem they face today.

And that, when you come right down to it, is the only essential difference between the problems of then and now. ■

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

THE NIMROD HUNT

IS . . .

★One of the most stunningly original novels of 1986

★High adventure for high IQs

★So far out that only a master of science fiction could have written it

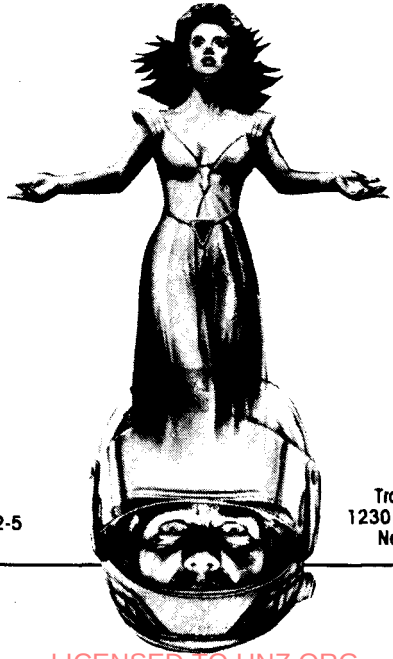
★So technically correct that only a master of *science* could have written it

★Awash with conceptions, any one of which would form the core of a lesser work

★Filled with the most intriguing combination of humans, aliens, bio-constructs, and mechanical intelligences in the history of science fiction

★An introduction to the galaxy's only perfect woman

ANSWER: ALL OF THE ABOVE!



BAEN BOOKS

AUGUST 1986 ★ 65582-5
416 pp. ★ $3.50

Distributed by
Simon & Schuster
Trade Publishing Group
1230 Avenue of the Americas
New York, N.Y. 10020

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

J. Brian Clarke

INTENT OF MERCY

When extermination fails to eliminate a threat, it may be necessary to try something more radical.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The meeting was extraordinary. At the head of the table was the ancient man who by a combination of tenacity and sheer genius had retained the Chairmanship of the World Union Council for almost six consecutive terms. Also present was Director Kreinhauser of the Security Service, as well as his opposite from Expediters. Completing the unlikely four was Jenkins, the Phuili Ambassador to Earth.

Gia Mayland entered the room with apparent calm, though she had not the faintest idea why she had been summoned to join these representatives of power. As she accepted the proffered chair, she was comforted by Peter Digonness' warm smile. "Good to see you, Gia. How are you?"

"Apprehensive," the expediter admitted. She inclined her head to the Chairman. "I am honored, sir."

"Likewise," Giesse Frobert rumbled. He looked at the slim woman appraisingly. "I have heard good things about you, young lady."

"Not so young," Gia said with a faint smile.

The rumble became a deep chuckle. "My dear, from where I stand you are a mere youth." Abruptly the broad face smoothed into an expressionless mask. "Anyway, to business. Director Digonness, if you don't mind—"

"Of course." The head of Expediters touched a control and the room darkened. Above the table an image formed. At first ghostlike, it edged toward apparent reality as a hidden holographic projector focused billions of bits of digital data. It was as if a window were opening into the universe. Suns speckled the darkness, gigantic dust clouds straggled across the light years, globular clusters and distant galaxies were faint patches above and below the glory known to humans as the Milky Way. In the foreground was a drifting mountain, its rough-hewn outline peculiarly jagged as if it were covered with sharks' teeth.

The mountain enlarged and gained detail. Finally Gia gasped with astonishment as she heard the Chairman murmur, "I was briefed earlier of course, but I still find it hard to believe. You are certain there is no other possible explanation?"

Digonness shook his head. 'I doubt it, Mr. Chairman. That asteroid is carrying something like two and a half thousand small spacecraft."

"I don't understand," Gia began. "Who—?"

Digonness said quietly, "The Silver People. Remember them, Gia?"

"Oh god no." Horrified, Gia stared at the slight graying man who to a large extent controlled her life. "Are you sure?"

"As much as I am sure of anything," Digonness replied sadly.

Gia shivered; the chill of an old nightmare revived. The Silver People had been a mad dog race utterly dedicated to the elimination of all life other than their own. A joint human-Phuili military expedition had already sterilized an entire planetary system to prevent the germinating anti-life plague from making the quantum jump from its own system to the stars. But not, it now seemed, with absolute success.

With dry tones belying the terrible nature of his revelation, Digonness continued, "Let's not forget the main point

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

of the Groombra reports, to the effect that traces of phase-shift emission were detected soon after seed activation of the Silvers' sun. What you are seeing is proof of what has long been suspected: that at least one of their ships escaped the nova."

"I am not convinced," Kreinhauser said flatly. His voice permanently hoarse from four decades of authoritarian use, the grizzled Security Director added, "That thing, and whatever is stuck on its surface, can be from anywhere. The galaxy is still a mighty unknown."

Chairman Frobert nodded. "My old friend has a point. And because the Silvers' system is still under quarantine, there is no way we can compare that vessel with abandoned sister ships which may still be in the system."

"I zink we not need compare." The Phuili Ambassador, a short, pale-skinned being resembling an intelligent bull terrier, had been examining data which scrolled with incredible rapidity across a portable reader. "Data show asterwoid less zan light year fwom system of Silvers. Wesidual velocity is movement still wadiating away fwom seeded sun. Zerefore ship is Silvers."

Gia took a deep breath. As a participant in the events which had led to the scorching of the Silvers' system in the first place, she now knew why she was here. Jase Kurber should also be present, except she had heard he was on assignment on one of the newer colony worlds. She addressed the little Phuili. "Mr. Ambassador, it has been four years since the seeding. If any of the Silvers escaped the subsequent nova using phase-shift, then surely they would be hundreds of light years away by now." She looked again at the image. "When was that recorded?"

"You are looking at real time." Digonness smiled at her obvious surprise. "Since that thing was discovered, we have been able to assemble a young fleet out there with collectively enough power to punch a lot of information through tachyon space. And I do agree with Ambassador Jenkins that that monster is a Silvers. The reason it is not halfway across the Spiral Arm is, I suspect, because the Silvers were only into first generation P.S. technology. Though such a drive works after a fashion, it allows only one surge before complete meltdown. I doubt, in fact, there is anything more than a pool of slag in what is left of a drive room."

Gia asked reasonably, "So why don't we board and find out?"

"For several reasons," the Chairman said. "Of which, Ms. Mayland, only two need concern you. The first is that the ship is probably heavily defended, or at least boobytrapped. The second reason is political." At this point the old man beamed at the Phuili representative. "Ambassador Jenkins, why don't you tell her the rest?"

"Yess." Two large faintly glowing eyes turned to the human woman. The alien projected friendliness to the entity he knew had had a long association with his kind. Gia felt that friendliness, recognized it, and welcomed it. Her last couple of assignments had been on human worlds; she missed the unusual but satisfying relationship possible between individuals of the two races.

"Human and Phuili togezer destwoy system of Silver People." The Ambassador's voice was high pitched and rasp-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ing, like a child with a bad cold. "But now know all Silver People not destwoyed. Human and Phuili must zerefore again togezer, zis time not to destwoy. Perhaps be ozer ships escape sun seeding, only chance find out is maybe on zat ship." The Ambassador paused, seeking words in a language which fitted awkwardly on a tongue and palate designed for very different sounds.

"May I?" Digonness asked understandingly.

The alien gestured. "Pleese. It best."

"Thank you." The Director of Expediters turned to the woman he considered the best field agent he had. "The Chairman said it, Gia. Politics. We need someone in charge out there: someone who not only represents the interests of Earth and Phuili enough to be fully acceptable to both, but who can also make decisions for both. The Ambassador has already been in touch with his home government, and has been told they will accept anyone jointly selected by him and Chairman Frobert. So they decided—"

"With your recommendation, no doubt," Gia interrupted dryly. Not burdened with false modesty, she knew exactly where this was leading and did not like it. "Damn you, Digger—" Suddenly remembering where she was, Gia blushed and rephrased, "Mr. Ambassador, gentlemen, I am not an administrator and never have been. There must be others who are better qualified."

The Chairman said softly, "All right, Ms. Mayland. Whom do you suggest?"

There was a silence, during which Gia realized there was no way she was going to wriggle out of this one. It was her unique rapport with the Phuili they wanted, plus the fact that she was well enough known that she could probably order a few humans around without causing too much resentment. Though, she observed somewhat caustically, she did not doubt she would get plenty of advice.

"But of course you will get advice." Digonness seemed puzzled by her reaction. "In fact, I understand the teams out there have already determined several options. You will probably be briefed about them after you arrive."

Gia smiled. "Oh, I am sure of that."

"Then you accept the assignment?"

Gia sighed.

Groombra Four was Gia's first stop. A planet in Phuili controlled space, it was the one closest to the Silvers' system bearing a terminal of the instantaneous galactic transport network that had been created by a race long since departed from the known universe. It was from Groombra Four that two ships, one human and one Phuili, had departed bearing the 'sun seeds' that would turn the sun of the Silver People into a small nova.

Toomis (as the Phuili called it) was a not unattractive world, with a breathable atmosphere and native flora and fauna appropriate to its semi-arid climate. The terminal towered over a narrow valley on one of the two continents which covered most of the northern hemisphere. There was a Phuili settlement not far south, but Gia's shuttle, as it emerged out of the flickering sphere of pale fire centered above the terminal's enormous bowl, turned east toward the second continent. Ninety

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Welcome to the age when the earth was flat and demons ruled the land

TANITH LEE

In her *Flat Earth* series, World Fantasy Award-winner Tanith Lee has created a truly stupendous achievement, drawing on the feeling and imagery of the tales of the Arabian Nights to produce some of the finest, most spell-binding novels of our time. Now fantasy's leading light once again lures us into an age when the daughter of a mortal woman and the Demon Lord of Night would rise to become Mistress of Madness and Delirium to challenge all.

TALES FROM THE FLAT EARTH: BOOK FOUR

DELIRIUM'S MISTRESS

"A brilliant writer at the top of her form."
—Voice Literary Supplement

"Tanith Lee will endure as a writer far beyond her time."
—Science Fiction Review

$3.95

DAW FANTASY

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

minutes later it landed at Fraser's Town, a compact human community of about one thousand souls. At the far end of the landing field was the ground-space shuttle which would take the expediter up to the phase ship she knew was waiting in orbit above the planet.

Gia had looked forward to a few hours of R and R before the next stage of her journey. But the uniformed man who was waiting for her as she emerged from the Earth shuttle had different ideas. He ushered her into a small ground car which he immediately steered in the direction of the other shuttle. "I am sorry, but my orders are explicit. The *Century* is ready to go, and will phase out just as soon as you are aboard."

Gia's lips tightened in frustration, but she did not object. Though a few hours was not much compared with the forty-two days it would take to reach the vicinity of the Silvers' ship, she realized that even minutes could count if the alternative was hordes of virulent anti-life rampaging the universe.

The shuttle was designed for minimum payload and maximum acceleration. So by the time it docked with the enormous *Century* and Gia unsteadily emerged from the transfer lock, she hoped she could at least get a little rest. But even that promise was denied, as she was met by a crewman who immediately escorted her through echoing corridors to the ship's Control Center.

The *Century* was one of the interstellar transports built before Sol's third planet was opened up to the galactic network. It could support eight hundred colonists in a spartan though adequate environment for up to three years, so was necessarily of impressive dimensions. But with nearly ten thousand worlds now instantly available from Earth, there was little need for this giant and her sister ships. Now they were usually in parking orbits above various colony worlds, until perhaps needed to ferry people or supplies to destinations not part of the network. The ships were too big to be efficient, but at least they were there. So, although only occasionally, they were still used.

The Control Center was almost as impressive as the old *Century* herself, containing rows of consoles in a vaulted chamber resembling a temple of worship rather than the working heart of a spaceship. Psychologists had insisted on this diversion from the appearance of state-of-the-art technology because, they insisted, the colonists needed to have confidence that those who were operating the ship could take them safely to destinations beyond a sea of suns. In the cathedral-like Center, the captain and his officers became High Priest and priests of a religion whose mysterious technological rituals were very comforting to the sturdy farmers whose lives had always been encompassed by the land and the unpredictable sky on the one hand, and their faith on the other.

Gia knew this, and indeed was a skilled technical pragmatist who understood the functions of most of the flickering displays. Nevertheless, something inside her was touched by the aura of controlled power as she carefully followed her guide between the consoles until she found herself before the High Priest himself.

"Hello, Gia," the captain said. "How long has it been? Three years? Four?"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Startled, she looked at him. "Uncle Joel!"

"Himself," the captain said fondly as he enveloped Gia with a rib-creaking hug. Large, ruddy-faced and white haired, Captain Joel Gresham had always regarded Gia as the daughter he never had, at the same time retaining a healthy respect for her considerable talents. "Take over, please," he asked his First Officer as he gestured Gia to follow him to his quarters behind the Center.

The main room was large and comfortable, containing the furniture and display cases Gia had last seen aboard his previous command: Transtar's *Farway*. A thin faced man in an unfamiliar black uniform rose from a chair as they came in. "Is this the expediter?" the man asked coldly.

"The lady's name is Gia Mayland," Captain Gresham replied, his voice equally frigid. "Gia, this is Major Harald Gostorth of Gostorth's Guards."

"I am not familiar—" Gia began.

"The Guards are necessary to protect Fraser's Town against encroachment by the infidel." Gostorth's face as well as his voice was wooden, humorless. "The universe is a hostile place, Expediter Mayland. Humanity must always remain vigilant."

"Of course," Gia said politely, though she had recognized the fanaticism in the major's pale eyes. Urging Gresham to the far side of the room, she whispered urgently, "That man's a walking threat! Why is he here?"

The captain's reply was blunt. "Because he has the right. Because, my dear Gia, we also carry a representative from the First Continent."

Gia was incredulous. "A Phuili? One of their xenophobes on *this* ship?"

"There was no choice. Every available Phuili ship is already at Silvers One." The captain chuckled. "By the way, it's a female. Uses the name Mary."

Gia whistled softly. "Where did you put her?"

"If you are thinking of the direct aproach, forget it. By her own request, Mary is in quarters as far from the human occupied part of the ship as possible." The captain glanced at the dour, black uniformed man from Fraser's Town. "Naturally."

Naturally.

Such was one of the legacies of the genocide committed by a permanent strike force which officially did not exist—although it would forever haunt the diplomatic shadows of the two governments who had clandestinely set up the force in the first place. The humans and Phuili of Groombra Four had been chosen because they were paranoid racists: perfect shock troops against anything "alien" threatening their respective puritanical concepts of what the universe should be. Safely separated by an ocean, the two communities scrupulously ignored each other, accepting cooperation only when certain coded requests were delivered from both home planets.

The destruction of the Silver People had been their first joint action. Now, as evidenced by their representatives aboard the *Century*, it seemed the two communities expected that their services might be required a second time.

Gia went back to Gostorth. "Are you aware there is a Phuili on board?"

The major nodded. "Of course. Con-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

sidering the circumstances, it is to be . . . ah . . . expected."

"But from your point of view, not desired. Isn't that so?"

"We all have our crosses to bear," the major retorted stiffly.

"The Phuili's name is Mary. Do you know of her?"

"I understand she is competent. For one of her kind, that is."

Gia turned to the captain. "Captain Gresham, I believe this calls for a conference." She pointed at the major. "Including him." She then pointed at the com unit. "And of course your other passenger."

"No problem." The captain punched a three-letter code and the big screen illuminated with the alien features of a Phuili. "Captain, I give you gweetings," the being said solemnly.

Gia moved before the screen. "My name is Gia Mayland and I am a member of Expediters. Your government and mine have given me command of the combined fleet at the asteroid known as Silvers One. Do you accept that authority?"

The long head inclined. "It iss wequired."

"What about you, Major Gostorth? Do you accept?"

"If it is absolutely necessary—" The major shrugged. "If you insist. Anyway, it is obvious I have no choice in the matter."

"Damn right you don't," the expediter muttered.

Phase shift, the P.A. announced. *. . . five . . . four . . . three . . . two . . . one . . . shift!* The deck trembled, there was a slight blurring of the senses, and then it was over. The *Century* was now enclosed within a bubble of multilight, heading to a destination forty light years in distance though only days in time.

Gia asked the major to sit near the com unit, then moved herself so she was facing both the major and the Phuili's screen image. "I want you both to understand," she began without preamble, "that I am not going to that asteroid to supervise its destruction. My purpose is knowledge: about the ship itself, its propulsion systems, and especially its passengers—if there are any. Mary, if you wish to transfer to one of the Phuili ships after we arrive, I will have no objection. Major, you may similarly transfer to any human-manned vessel. But neither of you will be allowed aboard any investigatory probes, and certainly not aboard the Silvers' ship itself. Even if boarding does prove feasible."

Mary said quaintly, "If Silvers on ship, zis one not wish go." The alien voice hardened. "But zink you wong. You should destwoy. Not take chance.'

"For once I agree," Gostorth said harshly. "I was there when we sunseeded the Silvers' system, and I remember how we rejoiced when we thought we had destroyed that festering evil. Expediter Mayland, perhaps you have forgotten it only needs one microbe to start a plague."

"But what if there are many microbes, Major? Will it stop the plague if we kill only one?"

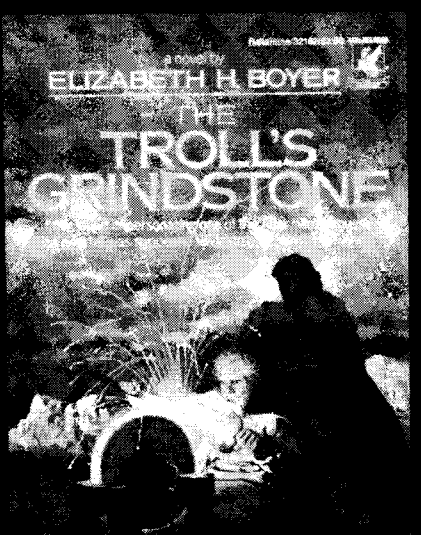
The captain coughed. "Until they asked me to bring the *Century* out here, like most people I had never heard of the Silver People and what was done to them." His face became bleak. "My

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Lured into the realm of magic to clear a bad elf's good name!

To escape his enemies, Liefr, a ne'er-do-well young Viking, took flight to the astounding Alfar realm and assumed the identity of one of its long-lost sons—Fridmarr. But little did he realize just how violently Fridmarr was loathed...

Dark fantasy to spark your imagination, from the author of *The Sword and the Satchel!*



On sale in July $3.50

DEL REY

#1 in Science Fiction and Fantasy

Published by Ballantine Books

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

god, to hear about such an act in this day and age—'' He shook his head. ''Anyway, my briefing did include the evidence suggesting that at least one of their ships got away as their planets were frying. But what if that was not a one-shot? What if there were others? Dammit, how many Silvers are tucked away just to man the more than two thousand spacecraft which that *one* monster is carrying? What are we up against? A fleet? A fleet of fleets? We need answers, and from where I stand there seems only one place where we even have a chance of getting them. And that is inside the guts of that asteroid!''

Gia went to the old man and hugged him. ''Captain, I could not have said it better.''

Mary asked sensibly. ''But how you get on asterwoid?'' With Phuili understatement, she added, ''I zink Silvers not want you on asterwoid.''

The captain chuckled. ''Good question. Good comment.''

Major Gostorth's eyes glittered. ''I think, madam expediter, this is one time you will regret not bringing my guards.''

Gia did not try to hide her contempt as she looked at the black uniformed man. ''Major,'' she said succinctly, ''you are a fool.''

The *Century* arrived and took up station in a void as apparently empty as would be expected in the almost-nothingness between the stars. But on the big ship's detectors, this was a busy area indeed. Roughly encompassing the surface of a sphere thirty thousand kilometers across, sixteen spacecraft of assorted types orbited an object currently known to the twenty-one-hundred entities aboard the ships as ''Silvers One.'' This was an overwhelmingly Phuili fleet, which was natural enough in this predominantly Phuili-settled part of the galaxy. It also explained the choice of a human operations director. The Phuili, being an obsessively logical race and not desiring to take on more than their fair share of what was, after all, a joint human-Phuili problem, had balanced the equation by acknowledging the authority of a human. Expediter Mayland was therefore not particularly surprised at the two-to-one ratio of Phuili over humans when she was introduced to her advisory staff aboard the bulbous vessel which was the fleet's command center.

What did surprise her, and pleasantly so, was the Phuili who came to her and took one of her hands in a very uncharacteristic gesture of friendship to one not of his race. ''I zink you and I are souls of one body,'' Davakinapwottapellazanzis (known to humans as David) said seriously.

Gia politely concealed her pleasure. ''This is not a coincidence, is it David?''

The long head inclined. ''Iss difficult. But I awange.''

Gia doubted the difficulty. Aside from his high status in the Phuili hierarchy, David's own part in the Silvers affair had given him formidable leverage. Though she was uncertain if gratitude should be the proper response for her place in this uncomfortable hot seat of responsibility.

Of the three humans on the advisory staff, one was also an old friend—whose embrace hinted at perhaps a little more than friendship. Pushing him to arms length, Gia laughed delightedly. ''Jase,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

it is just like Christmas homecoming! How in blazes did you finagle this one?''

Jase Kurber grinned as he ran fingers through his thinning black hair. ''I didn't. Believe it or not, Digger assigned me here a couple of months ago.''

Gia's eyes widened in astonishment. ''The devil he did!'' So even as she attended the meeting with Giesse Frobert and the others, Expediters' Peter Digonness had already set the wheels in motion to renew a previously successful partnership. Not that she minded the director's intervention. Gia, Kurber, and David had proved their compatibility. Still, there was a hint of forces beyond her control which made Gia uneasy. But for the moment dismissing her doubts, she said briskly, ''OK, I was brought here in a hurry so let's not waste further time. What can anyone tell me that perhaps I do not already know?''

The Phuili version of an ''operations'' room in which Gia and her advisers were located was low, curved and slightly claustrophobic to the humans who were considerably taller than their small alien colleagues. But claustrophobia became vertiginous agoraphobia as the unoccupied half of the room suddenly winked out of existance and became instead an opening into the infinity of deep space. It was how the Phuili did such things, regarding as totally unnecessary the ''fade-in'' used by humans to allow time to adjust to the incredible reality of holo projection.

The combined gasp from four human throats was followed by a guttural sound which Gia interpreted as the Phuili equivalent of laughter. But ever the perfect diplomat, David diverted attention from the discomforture of his human friends by zooming the field toward the object known as Silvers One and commenting, ''Gia you perhaps see zis before. But not I zink so close.''

No. Certainly not so close. This time, instead of stopping above an area of slender needle-nosed columns which stretched from horizon to close horizon like a metal forest, the zoom continued in until only one of the columns was visible. It was undoubtedly a ship, small and clean of line, its base concealed in a depression sunk into the asteroid's crust. ''Small cwew,'' David said. ''Two. Zwee maybe. Not more.''

He retracted the zoom slightly and then moved the field over the ranks of ships. In some places, the hulls were so close the rock of the asteroid was barely visible in the spaces between.

Kurber said, ''Notice the absolute lack of recognizable features on those ships, plus the fact that they are as alike as peas out of the same pod. I am not sure what that implies, except to presume they are the products of mass production on a truly massive scale.''

''Vewy fast to make,'' one of the other Phuili agreed. ''As if know zey must finish and send out-system before we find and stop.''

Gia nodded. Perhaps the Silvers were mad, but it seemed they had been smart enough to realize their plans for the rest of the universe might be opposed by some. She looked sourly at the ugly image, the rows of daggerlike craft aimed beligerently at the stars. ''What else can you tell me?''

''Watch,'' David said.

Again the little Phuili manipulated the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

holo controls. The image zoomed back until the asteroid was merely a stony space wanderer in the center of the field. The star background had shifted slightly, so Gia judged she was no longer watching in real time. Her guess was confirmed by the large man who had been introduced as Keller Vanderbrusse, communications specialist. He pointed at the Phuili numerals rapidly scrolling at the edge of the field. "This was recorded about twenty hours ago. I know we jumped the gun, but time is short and it did seem the obvious first step."

Something glinted in the foreground, suddenly flared and streaked toward the asteroid. "We aimed to miss by about a thousand klicks; close enough to be noticed, distant enough to imply a nonaggressive intent."

"I forgive you," Gia murmured, appreciative rather than angry at this demonstration of intelligent initiative. The image switched to one seen by the probe's camera as the tiny vehicle accelerated along its present course. Again the asteroid changed: from a distant irregular shaped object like any other of its size and mass, to a formidable and bristling carrier of . . .

There was a flash of light, another, and then several more as the asteroid reacted. The missiles themselves remained invisible as the probe reached its closest point and began to draw away. The asteroid's surface was quiescent again, resuming the enigmatic status it had held since being discovered. Slowly the asteroid retreated; eleven hundred kilometers, twelve hundred, thirteen . . .

The image flickered, was replaced by an expanding sphere of fire as seen from the Phuili command ship. For a while the sphere pulsated, waxing and waning with obscene irregularity. "A slight case of overkill," Vanderbrusse commented. "Seven warheads against one innocent little proble."

"So how do we get into that thing?" Gia asked.

"Exactly."

The problem seemed unsolvable. Gia lay and stared into the darkness of the cabin assigned to her, wishing she had the expertise to understand what was currently happening back in the operations room. At her suggestion, electronic and propulsion experts had been brought in from all over the fleet, "to find a means to jam or overwhelm the asteroid's defenses." She hoped she had injected some sense of purpose that had not been there before, though in her heart she suspected they were grasping at straws. Jamming seemed very unlikely; without some knowledge of the systems under that stony crust, the odds against were enormous. And how, with a mandate that allowed for everything except the destruction of the asteroid, does one "overwhelm?" In any case, the closest thing in the fleet to a warcraft was *Luna*, a patrol ship from the early years of human expansion into space. With only a single missile tube, that military anachronism was about as useful as a mounted cavalryman against a squadron of tanks.

Gia was not sure if she slept. In that half world between waking and dozing, in which the mind plays tricks with time as well as logic, she was not at first aware of the thrumming of the ship's drive as it accelerated the big spacecraft

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

L. RON HUBBARD'S
THE ENEMY WITHIN
VOLUME 3 OF
MISSION EARTH

"Marvelous satire by a master of adventure." Anne McCaffrey

What does a whorehouse for diplomats, corrupt lawyers, a Nature Appreciation class, Connecticut deputy sheriffs and a mad psychiatrist have to do with the survival of Earth?

$18.95
Hardcover.
416 pages

They are all part of Volume 3 of L. Ron Hubbard's magnum opus MISSION EARTH. Narrated by the despicable alien killer sent to sabotage Earth's survival. The Enemy Within excites its readers with high-speed entertainment and the most bizzare collection of characters to hit this corner of the galaxy.

"The Enemy Within was totally absorbing. I couldn't put the book down." RAY FARADAY NELSON

"Satire that takes a sawed-off shotgun to its targets. And lets fly with both barrels." F.M. BUSBY

"...fast paced and thoroughly enjoyable." UNITED PRESS INTERNATIONAL

"...a delicious read...as one would expect of an experienced pro." WASHINGTON POST

GET VOLUME 3 OF MISSION EARTH

The biggest science fiction dekalogy* ever written

THE ENEMY WITHIN

THE NON-STOP ADVENTURE CONTINUES WHERE L. RON HUBBARD'S NEW YORK TIMES BESTSELLERS "THE INVADERS PLAN" AND "BLACK GENESIS" LEFT OFF.

Literary Guild Alternate Selections

BUY YOUR COPY TODAY!

Wherever fine books are sold

*Dekalogy: a group of 10 volumes

© copyright 1986 Bridge Publications, Inc. ALL RIGHTS RESERVED

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

out of its orbit. But she was startled into full wakefulness by the piercing phonics of a screech alarm. *"Iknillic!"* rasped a Phuili voice over the P.A. *"Rassin bil Iknillic!"*

Not having the faintest idea where the bridge of this alien vessel was located, and knowing she would not be welcome there anyway, Gia could only hurry back to Operations as more incomprehensible Phuili consonants rattled out of the P.A. When she entered, the experts were still there, anxiously watching the holo image of a double-hulled ship linked at each end by a complex of spheres and struts. A faint blue-white glow was flickering around the entire assembly.

Gia asked breathlessly, "What is going on?"

"Runaway converter," was the laconic reply of a lanky human Gia vaguely remembered seeing on the *Century*. "They are already evacuating." As he spoke, dozens of passive life pods began spewing out of the stricken Phuili ship as shuttles from all over the fleet raced in and picked them up like sharks swallowing minnows.

The expediter found a vacant seat and slid into it. "Is it going to blow?"

"Haven't the foggiest." The man frowned puzzledly. "The point is, what could have caused it? The safeties these days—"

"Not accident," one of the Phuili said flatly. "Zat happen because someone make."

"Sabotage? But who—?" Gia's eyes widened. *"Iknillic!* Now I remember. That's the ship that took our Phuili passenger, while Major Gostorth—" Her face went white. "My god, where's *Luna*?"

David, followed by Jase Kurber, had entered just beofre Gia's horrified flash of realization. Almost as if he were reading her mind, her small friend immediately sat before the holo controls and switched the image to a plot displaying near space. The Phuili ships were represented by blue points of light, the human ships by green. The asteroid was a lurid red near the bottom edge of the field. All the blue and green points were converging on the flickering blue spark of the damaged Phuili spacecraft, though it was noticeable that the ships from the far side of the englobement were curving wide to avoid the prickly menace at the center.

All except one.

By this time the tension was almost palpable as David touched the control that would identify the miscreant vessel. A symbol appeared.

Kurber swore. "Godamn, it is the *Luna*." He shouted across the room to the lanky human from the *Century*. "Kerrin, who are *Luna*'s owners? And what do we know about her crew and their point of origin?"

Kerrin's hand-sized comset, keyed to a memory bank aboard one of the human ships, took only seconds to roll out a slender piece of flimsy. "She's owned by the Lecfras Trust on Unity," Kerrin called back. "Most of those aboard are Unitans."

"Lecfras." Kurber took a deep breath. "Translates to Lector Fraser. Anything bearing that name has to be further right than Attila the Hun. And the Unitans themselves are not much better."

The green trace seemed to be ap-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

proaching its closest point to the asteroid: not suicidally close, though near enough to indicate a captain whose recklessness was somewhat surprising for a responsible officer. Gia prayed she was overreacting, that this was merely a coincidence—not an unholy conspiracy which for place and timing promised an unpleasantness far greater than merely the destruction of a single ship. But that hopeful thought lasted only a few seconds. With a flare of thrusters at full power, *Luna* suddenly flipped ends and blasted away from the asteroid as if hell itself were at the little ship's heels. Where *Luna* had been, a tiny spark accelerated furiously along a tight curve which left no doubt of its intended target.

Everyone in Operations was momentarily paralyzed as they realized how neatly they had been hoodwinked; from the 'accident' which had attracted every unit of the fleet, to the attack run which in any other circumstance would have been forcibly aborted long before its initiation.

Already the asteroid was reacting; seven tiny flashes from its surface, one after another as backup followed backup with neat regularity. "It's ridiculous," Gia murmured, half to herself. "How can one silly missile—?"

The answer came almost with the question as, seconds before it was obliterated, the spark ejected something behind it. With the same furious acceleration as its parent, the second component passed through the expanding cloud of gases created by the seven defense warheads.

Again flashes from the asteroid, and again a multiple explosion—just after a *third* component split away from the attacker and accelerated at an incredible rate through the detritus of the second series of explosions.

The third reaction from the asteroid was apparently successful, though for tense seconds the asteroid itself could not be seen behind the fading cloud caused by its last salvo of missiles. As it gradually reappeared, a blackened area on the asteroid's near side indicated it had not gone entirely unscathed.

David anticipated Gia's question. "Missile fwom human ship made by Phuili. Vewy old, not make fwom many centuwies. Zwee, one in anozer, all shielded. In head, matter against matter. Vewy dangerwous."

"Anti-matter," Kurber breathed. "My god—"

"Zink Phuili you call Mawy and human you call Major awange zis. But not work because Mawy not know heads changed since many cycles. Now missiles only for warning. Not hurt much."

The situation was so improbable, Gia doubted she would dare recount it to anyone not already conversant with most of the facts. Though it was possibly true that man and Phuili were indeed a duality that might ultimately rule the universe, on a smaller scale the duality on Groombra Four had instead become an insanity as potentially potent —and tragic—as the Silvers aberration it had been set up to destroy. Such an insanity, fueled by hate of an enemy that eclipsed the hate they had for each other, was something the greater human-Phuili partnership was going to find increasingly difficult to rationalize.

"Iknillic!" said the P.A. *"Iknillic si enne rassin!"*

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

David returned the holo image to that of the burning ship—which was no longer burning. After a moment of uncomprehending silence, the little Phuili then uttered a word so full of angry consonants it was like a vocal explosion. "It pwoof," he told his human friends, his bitterness evident even to unaccustomed ears. "Because plan fail, Mawy weverse what did to converter. She only one know ship not in danger, so I zink she still on ship."

Gia sympathized with David's shame. But she was also familiar enough with Phuili psychology to know it was not a matter to be discussed. "Then I suppose we can cancel the evacuation and get everyone back on board." She paused. "What is *Luna* doing?"

Kerrin entered the query into his comset. "Returning to station," he replied after a moment. Marveling, he shook his head. "The gall of those people. They are carrying on as if nothing happened!"

Despite herself, Gia smiled. "What else can they do? They are not the first losers who have used bravado to face their sins."

Kurber asked tentatively, "What do you want done about Mary and Major Gostorth?"

Gia looked at Kurber. Then at David. Her face was bleak. "I want punishment. I want both of them brought to this ship and confined together. Until I rescind that instruction, no one—human or Phuili—is to communicate with either."

Kurber whistled. "Bit drastic, isn't it? How long is this . . . ah . . . joint confinement to last?"

"Until I decide it can end." The expediter's expression softened. "Jase, I know it's cruel, but we need to know the extent of the conspiracy. Hopefully, reaction to each other's physical presence will prove stronger than any urge to remain silent."

David inclined his long head. "Zis one agwee. Perhaps it way to stop ozers twying same."

Perhaps, Gia thought as she returned to her cabin and again prepared to catch up on lost sleep. But she doubted that one failure would deter the fanatics of Groombra Four. From their myopic viewpoint, the only enemy was the one at hand—which allowed little or no room for consideration of anything else. Especially a threat which existed only in theory.

Gia was so exhausted that sleep came easier this time. But hardly, it seemed, had her head touched the pillow when she heard the twanging of her cabin's attention alarm, and then a familiar voice. "Gia, are you awake?"

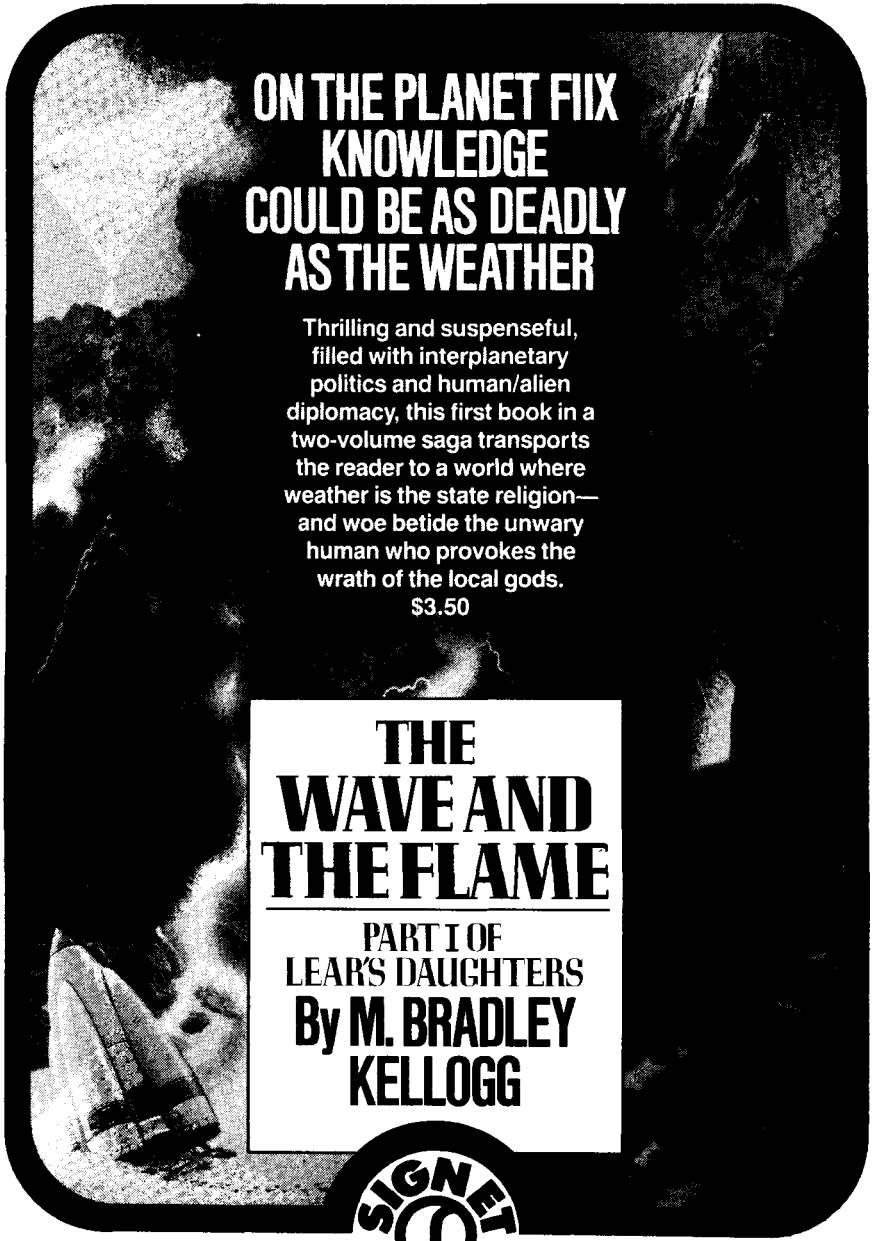
She looked at her watch. She had been asleep for five hours. She yawned and said to the air, "Yes Jase, I am now. What is it this time?"

"Something you should see. Good news for a change."

Gia was intrigued. Within a couple of minutes she was back in Operations and staring with wonder at the image of a sleek, slightly singed object clamped to the hull of the Phuili ship Mary had sabotaged. "That last little fracas dislodged it from the asteroid," Kurber explained cheerfully. "It was found drifting, identified as a harmless crew carrier and then brought in."

David added, "*Iknillic* our wepair

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED


ON THE PLANET FIIX
KNOWLEDGE
COULD BE AS DEADLY
AS THE WEATHER
Thrilling and suspenseful, filled with interplanetary politics and human/alien diplomacy, this first book in a two-volume saga transports the reader to a world where weather is the state religion—and woe betide the unwary human who provokes the wrath of the local gods.
$3.50
THE
WAVE AND
THE FLAME
PART I OF
LEAR'S DAUGHTERS
By M. BRADLEY
KELLOGG
SIGNET
SCIENCE FICTION

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

and build place. Have cwew and machines to fix all zings. Zey put contwol on Silvers ship to hand at distance."

"Radio control?" Gia began. "But why—?" Her face cleared. "Of course. If the asteroid's defenses recognize it as a friend, it opens a door we did not have before." *This had better be the break we need, or someone else can have this job!* "Go ahead. Please."

Daring to hope, Gia watched the image as space-suited Phuili drifted away from the captured prize and re-entered their ship. Magnetic clamps released and the Silvers' craft turned and accelerated smoothly toward the asteroid. Minutes passed. Steadily, the distance closed.

"We appwoach cwitical point." David indicated the scrolling numerals. "Soon we know."

Twelve hundred. Eleven hundred. One thousand . . .

By now there should have been a reaction.

Nine hundred. Eight hundred. Seven . . .

Still no reaction. No one seemed to be drawing breath. Even the Phuili observers were suspended in timeless anticipation; their small bodies rigid, great eyes staring.

Five hundred.

Three hundred.

Still nothing. The remote pilot steered his charge about the asteroid's equator, at one point dipping below a hundred kilometers. There was a small sound in the room, a concerted sigh. Then, as the distance finally began to increase, a whoop from Vanderbrusse. "We made it!" the big man exhaulted. "Dammit, we can go!"

The Phuili were also happy, bowing to each other and to their human guests in a display of emotion rare for that notoriously phlegmatic race.

Gia was in a more practical frame of mind. Though a door had opened, it was nevertheless a very small portal. "David, you told us those ships are crewed by three, at the most. Do those numbers still hold?"

The Phuili nodded. "Inside of ship vewy small. Even zwee tight to get in." Still the diplomat, he continued, "But you to decide who, fwiend Gia."

Three hours later, Kurber and two Phuili identified as John and Matthew found an entrance lock on the surface of the asteroid. The exterior controls were simple and the lock opened easily. Two hours after that, Gia and David came down and met Kurber in an enormous chamber at the heart of the asteroid. The chamber was spherical, its inner surface completely covered with thousands of glasslike protrusions that reflected the light from their lamps like a coating of precious stones. Phuili voices muttered in Gia's helmet phones, there was a pause, and then the entire space became brilliantly illuminated.

David said with satisfaction, "Zey find contwol center and turn on power. Soon find defense contwols and turn off."

Kurber was floating near one of the protrusions. He called Gia over. "Want to meet the crew of this beast? Come and say hello."

The expediter activated her suit jets and drifted across. The protrusion was actually a transparent hexagon about fifty centimeters wide. As Gia grasped

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Kurber's shoulder and steadied herself, he shone his lamp into the hexagon. Inside was the head and shoulders of a gray-furred being. Its eyes were closed, the long arms were folded across the chest.

Gia felt strange, her revulsion conflicting with her awareness of the undoubted physical attractiveness of the being. "What happened to them?" she heard herself whisper. "What made them what they are?"

"God knows," Kurber replied. "Perhaps in the past some paranoiac demigod came to power and somehow transferred his sickness to the whole race."

"Iss possible," David agreed. The little Phuili was drifting alongside them, his snouted face enigmatic behind the reflected highlights of his helmet. "Pleese come. I zink ozers find somezing."

The two humans followed him out of the chamber and back up the broad corrider which led to the surface. Then they turned aside through a side portal, into a long room covered with display panels and ranks of multi-colored indicators. John and Matthew were at the far end of the room, before an enormous panel split in two halves. One side was brilliantly ablaze with thousands of tiny sparklike indicators all glowing orange. The other side was identical, except the indicators were blue.

There was a rapid exchange in the incomprehensible Phuili language, before David turned to his human friends. "Place we just in filled wiz what you call sleep tanks. We zink zis place is where sleepers made waking." David gestured at the tiny indicators. "Each light push in like little button." Expectantly, he looked at Gia.

His point was painfully obvious. Whether or not to revive any of the sleepers was a decision only Gia had the authority to make, and it was one which made her fervently wish she were elsewhere. Even to revive only one or two of the graceful monsters had the potential of being the unleashing of a dormant plague. On the other hand, not to revive could mean they would never know—or at least probably not until it was too late—if there were any other drifting arks waiting to release their cargoes of comatose malevolence into an unsuspecting universe.

Thoughtfully, Gia studied the huge panel. "David, are the Silvers bisexual?"

"Have seen only one corpse of wace. But it have like male."

Kurber's mouth twitched. "I suppose you have a reason for that . . . ah . . . delicate question?"

Gia nodded. "It looks to me there are about as many lights on that panel as there are sleepers. Which suggests that the two colors represent the two sexes —and please note there is an equal number of each. So if we revive—"

"Even if we can, we shouldn't!" Kurber interrupted sharply. "To start with, we have not yet figured out how to activate the atmospheric life support. And the reviving process is probably automatic anyway, most likely triggered when the asteroid reaches the neighborhood of a star."

David was also studying the panel. "I zink automatic only for two. If two zen see planets wiz life, zey can make ozers to wevive." He pointed to the top

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

of the panel, where symbols linked a small row of orange-blue pairs. "I say contwol start at top two. If not work, zen next two."

"And so on." Kurber rubbed his chin. "You know, that does make sense. It also means we merely have to find the asteroid's sun proximity sensors and generate a phony signal." He grinned. "Interesting possibilities there, don't you think?"

"I am not interested in mere possibilities," Gia said grimly. "Before we stick our necks out on this one, there will have to be certain stringent controls."

The expediter's instructions, which she issued immediately after they returned to the command ship, provoked some discussion but not much argument. Something had to be done, everyone knew it, and the necessary preparations were well within the capabilities of the fleet and its polyglot crews.

The biggest job was the painstaking analysis of the various electrical and mechanical systems aboard the Silvers ship, followed by modifications which the original designers certainly never had in mind. Interfacing with the asteroid's voice and control circuits, a tough task by any standard, was also accomplished within the stipulated time. Whether or not the newly introduced translator module was sufficient, was something they would not know until after the operation was initiated. At this stage, all Gia could do was dilute her worries by concentrating on other things.

After a thorough exploration and mapping of the asteroid's interior, explosive experts were called in. Carefully they installed and set their charges, then withdrew. The consequent explosions were minor, designed merely to seal certain tunnels and service shafts. But for fifteen tense seconds the huge mass reverberated like a bell before finally rumbling into silence. Anxious minutes followed as circuits were checked for possible disruption. Nervously, Kurber remarked, "That was a bit more than I expected."

Gia nodded, though she did not speak. Her state of mind was such that she would gladly have swapped her current situation for any from her past, even those that had been life threatening. Old fashioned fear was one thing; she could cope with that and often had. But the strain of these moments was something close to unbearable.

She stood up. "Dammit!"

Kurber looked at her. "I agree," he said uncertainly. "Do you have something in mind?"

"I am going to have a little talk with our friend Gostorth." Gia held up a restraining hand as it seemed Kurber was about to join her. "No Jase. This is personal."

She knew she was being selfish. But Gia had long ago learned to trust her own combative instincts. If conflict was in the wind, even if only verbal with a programmed fanatic, the challenge was a welcome catharsis.

The major was now confined alone, but his red-rimmed eyes and nervous twitch indicated he had not long been separated from his unwelcome roommate. Gia's first words were a cheap shot, but she enjoyed saying them any-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

TWILIGHT: 2000

A Major New Role-Playing Challenge: *Survival in a War-Torn World*

Welcome to 2000 AD. World War III began five years ago. It's still going on, but that's the least of your problems. A few days ago, you were soldiers in the U.S. 5th Division. Now you're just fighting to survive.

Your equipment was brand new in 1995; now it's wearing out. Gasoline is rare, so your vehicles run on alcohol you distill yourself. And 5th Division's cavalry—when there was a 5th Division—rode horses. There's not much government left, just warlords, marauders, and free cities. Even the major powers are collapsing; whole divisions are refusing orders and heading home.

Your division is gone, and you're hundreds of kilometers inside enemy territory; fortunately, the Soviets aren't in much better shape than you are.

Your job is to stay alive, find enough fuel and spare parts to keep moving, get home (wherever that is), and maybe even strike at the enemy.

Twilight: 2000 is a major new roleplaying game, with new systems covering combat (from hands to tanks), skills and tasks, survival, encounters and NPC motives, and a great variety of equipment. It also contains extensive background information on the war and the current state of central Europe.

$18 at your local hobby shop or direct from GDW. (Add $1 for handling.) Send $1 for our catalog.

GDW **Game Designers' Workshop**
P.O. Box 1646
Bloomington, Illinois 61702-1646

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

way. "I gather you and Mary did not get along too well."

"You are a bitch," Gostorth said tonelessly.

Gia smiled. "Thank you." She sat down facing him. "Do you want more company? I can arrange it, you know."

"What do you want?"

"I want to know the extent of the conspiracy. I want names."

He sighed. "I am surprised you did not have me pumped full of some T-drug. It would have been easier and less . . . ah . . . uncomfortable."

"Easier? Less uncomfortable? For you, Major, perhaps. But you see I do not want you to come away from this with an easy conscience. You will talk because now you know what will happen to you if you don't. We do not need any drug."

Again he sighed. Compared to what he had been, Gostorth was definitely a reduced man. Gia recalled what she had seen when, during a rare spare moment, she had tuned in to a pickup in the confinement area. The two conspirators had been huddled in opposite corners of their shared space, not speaking or moving. Only their eyes had been warily active, as if each suspected the other was a predator about to pounce. It had been a depressing scene. Mary was now confined elsewhere—apparently, in the Phuili context, as much disturbed as the xenophobic human.

Gostorth said, "*Luna* was in on it."

"Of course *Luna* was in on it!" Gia looked at the man with contempt. "Please do not insult me with the obvious. Frankly, *mister* Gostorth, if it was not for the weapon you used, I could almost have been persuaded this thing was strictly between you, Mary, and *Luna*'s idiotic crew. But because that weapon had to have originated from Phuili—"

The P.A. beeped. "*Human Gia needed,*" an anonymous Phuili announced. "*All weady for start.*"

The expediter rose to her feet and went to the door. "Think about what I have said," she told the reduced man. "I will be back."

It seemed everyone was there waiting for her. Sitting or standing, Phuili and humans were all looking at the split image on the screen at the end of the room. This was ordinary 3D as opposed to holography, but the excitement generated by the image of the sleepers' control panel on one side, and the vault with its thousands of glassite hexagons on the other, was almost enough to make the air crackle.

Gia sat in the seat reserved for her between Kurber and David. "What did Gostorth have to say?" Kurber asked.

"He's malleable," was Gia's obtuse reply. "Is everything set?"

"We weady," David said.

Gia clenched her hands under the table. "Then let's do it."

David whispered into his comset. A Phuili technician closed a switch and fifteen thousand kilometers away a carefully programmed data package began feeding into the receiving unit of a detector mounted on the asteroid's surface.

For about twenty interminable seconds nothing happened. Suddenly Gia grabbed Kurber's arm and pointed.

"Jase. It's beginning."

On the image of the control panel,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the top pair of orange-blue indicators had begun to pulsate.

Enrahin stretched cramped muscles. His thoughts were still somewhat blurred, but already he remembered where he was and why. Air blew on his cheek and chilled his damp body as the reviving process reached its final phase and as the automatics built up atmospheric pressure outside his stasis chamber. An indicator began pulsing above his head, telling Enrahin he could now open the lid and exit the chamber. The lid swung back easily, and as he floated free he looked below him and to the right. He did not know Ayree's exact location, but surely her pulse indicator would tell him if the loved one would again share his life.

It was there!

It was very faint, but the tiny pulsing glow was unmistakable to his eager eyes. Enrahin immediately launched himself down past the ranks of chambers and their time-suspended occupants, reaching and embracing Ayree just as she began to emerge.

"Again we are one!" he said happily.

She blinked sleepily. "How long?"

"I do not know. Only minutes has it been since I woke."

Ayree shivered and fluffed her fur. She was beautiful, even with the uneven hair growth caused by lack of grooming. "Then we must find out," she said practically. "Control did not wake us for nothing."

She flexed her long legs and with a single soaring leap reached the main access opening. Her mate followed, into the broad tunnel which ultimately led to the surface. Suddenly he bumped into her as she floated helplessly before rubble which completely blocked their way.

Enrahin was as horrified as she was, but he had been stim-programmed, so his reaction was immediate. He urged Ayree into a side tunnel. "Come. I think the way to Control One is still open."

Ayree obediently turned and followed him into a long room lined with panels and winking displays. Once they were inside, Enrahin said loudly, "Control. Are you listening?"

A voice answered. It was weak, electronically disturbed, and beyond the noise of interference its words were halting and strangely accented.

I LISTEN.

"List. Time since drive activation. State of vehicle and life units in storage. Reason for activation of life units E19 and A304."

TIME. FIFTEEN HUNDRED AND NINETEEN DAYS LESS ELEVEN MINUTES. STATE. VEHICLE DAMAGED BY EXPLOSIVE OVERLOAD OF PHASE SHIFT DRIVE SYSTEM CAUSING COLLAPSE AND BLOCKAGE OF SEVERAL PASSAGES. STORED LIFE UNITS UNDAMAGED. STASIS AND CONTROL SYSTEMS STILL OPERATIVE. REASON. ANOMALOUS INDICATION OF STAR PROXIMITY.

Ayree felt for and grasped Enrahin's hand. "Explain use of term, anomalous."

VEHICLE CURRENTLY ZERO DECIMAL SIX STANDARD FROM SYSTEM OF ORIGIN. NEAREST STAR IN DIRECTION OF MOTION TWELVE DECIMAL NINE STANDARD. INDICATION OF STAR PROXIMITY THEREFORE ANOMALOUS.

What does it mean? Enrahin's twin hearts thudded as he pondered this strangeness. He heard Ayree ask,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Is it possible the star sensors were also damaged by the drive explosion?"

SYSTEMS CHECK COMPLETED. POSSIBILITY OF ERROR THREE DECIMAL ONE PERCENT.

"Identify possible cause of anomaly."

NINE ONE DECIMAL SIX PERCENT PROBABILITY STAR PROXIMITY DATA ARTIFICIALLY GENERATED.

Fifteen thousand kilometers away, Expediter Gia Mayland turned off the microphone. "Now they know," she whispered as, on the screen, two attractive gray-furred beings stood with eye-glaring rigidity. Then there began a spasmotic twitching of the male's right hand as, slowly, he turned toward the sleepers' activation panel. . . .

Ayree dug sharp claws into his upper arm and pulled him away. "No Enrahin, not yet. We do not know enough."

Like an animal emerging from water to the dry land, he shook himself. But Enrahin's eyes were still wild and unfocused as he said hoarsely, "Control said artificial. That implies life."

"Control is artificial. Does Control live?"

Gradually the wildness died. "No. Bu . . . but we built Control. *We* are life!"

"We are life," Ayree agreed. "And by creating Control, we proved that intelligent action need not necessarily be exclusive to living beings. Perhaps life created whatever generated the anomaly. But we do not have the right to activate any of the others until we are certain that we face that other life. Not merely what it once created."

Ayree had always been the analytical one. Realizing the logic of what she had just said, though still shivering with the hate/fear that was his birthright, Enrahin dragged forth his cowering reasoning-sense and forced it into action. "So if we are not dealing with life *is*, then it must be life *was*. Either way, it is a shattering thing."

His mate nodded. "And proving, of course, the necessity of the Great Work. But would you and I be performing our Holy Task if we activated other life units prematurely? It is precisely because stasis is limited to once per life unit, that Control has been programmed to activate only two at each time. So it is our function, dear one, to determine the nature of this anomaly and then to make a proper decision. If it is life, then we must activate as many brothers and sisters as is necessary to rid this area of the infection. If it is not life, then it is our duty to return all systems to cruise mode and then to submit ourselves to the nutrient vats. What we cannot do, others will do—and we will be there, our substance being part of their substance."

"My god, what kind of philosophy is that?"

"Cold blooded."

"But they are not machines. Their obvious affection for each other proves that."

"Even Hitler loved his Eva Braun. And I am sure Caligula had his tender moments. We cannot afford to go soft, Gia."

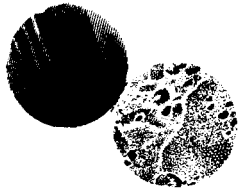
"Agwee we not take chance. But zat little good perhaps mean we can make into bigger good. Maybe later we make. But first still have find out if ozer ships.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

analog

CONGRATULATES THE WINNERS OF THE 1985 NEBULA AWARDS

given by the Science Fiction Writers of America:



Best Novel

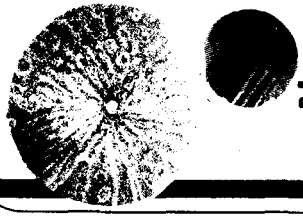
Ender's Game
by Orson Scott Card
(expanded from "Ender's Game," *Analog*, August 1977)

Best Novella

"Sailing to Byzantium"
by Robert Silverberg
(*IAsfm*, February 1985)

Best Novelette

"Portraits of His Children"
by George R.R. Martin
(*IAsfm*, November 1985)



Best Short Story

"Out of All Them Bright Stars"
by Nancy Kress

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Fwiend Gia, you have somehow make zem speak."

Enrahin asked, "Is the anomaly close enough that it can be shown on the screen?"

NEGATIVE. OPTICAL AMPLIFYING CIRCUITS DAMAGED. SELF REPAIR PROGRAM OPERATING.

"How long before repairs are complete?"

CURRENT DATA MAXIMUM TWO POINT SEVEN HOURS. MINIMUM ZERO POINT THREE HOURS.

"Do available sensors indicate anything of anomaly other than its possibly artificial nature?"

"That's it Gia! The question we need!"

"Oh I hope so," the expediter said fervently. She took a deep breath. . . .

SIX TWO DECIMAL EIGHT PERCENT PROBABILITY ANOMALY SIMILAR TO THIS VESSEL.

Enrahin groped for Ayree's hand. *That is not possible.*

"Clarify," he said.

ANOMALY OF SIMILAR SIZE AND MASS. INDICATIONS OF METALLIC STRUCTURES ON SURFACE.

"Like needle-ships," Enrahin muttered, half to himself. "But that cannot be. We know the others were—"

His mate's grip became so fierce it caused pain. *Don't speak of it. Not even this way!*

He knew Ayree was merely insisting on observance of the rules, even when using secret-talk. It seemed an unnecessary nuisance, but with an inward sigh Enrahin decided to abide. There would be no conflict with his love, even of the most minor kind. *I was wrong and I am sorry. So please do not . . .*

Ayree said firmly, "Whatever is out there, *if* it is a ship, then it must be of other-life. How can it be otherwise, considering this is our only ark?"

Wondering for whose benefit she had voiced the lie, Enrahin suppressed the urge to secret-talk his doubts. What was bothering Ayree anyway? Did she still believe in that hoary old theory of a transmental component of secret-talk? "Dear Ayree," he said. "What you say is true, of course. But you know how I like to project myself into the future, imagining the people as they *will* be—countless trillions of us, cleansing and purifying the cosmos until it is perfect. Time is vast after all, and we are prolific. Truly the Great Work will come from this single holy seed which bears us all towards our destiny."

"Damn!" Gia's frustration caused her to thump the table so hard it made Kurber jump. "Did you see and hear that? The male said it for god's sake. Others! But then she stopped him. How?"

"As if know we listen." David's huge eyes were somber. "But zink zey not know. Equipment we put hidden too well to find yet. Zink female do smart guess. Zen tell male shut up, perhaps wiz mind talk."

"Telepathy?" Kurber frowned. "Could be. But the problem still remains: presuming they have other ships out there, how in blazes do we find out about them? We have already searched the asteroid for physical evidence, though I suppose we'd need years to poke into

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

every nook and cranny. So let's face it; our only hope is still inside one or the other of those two furry skulls."

"And how do we do that?"

"Plan B. Make friends with them."

"That is not funny, Jase."

"Who's laughing?"

The two Silvers had made a quick tour through the main tunnels, and so far had found each surface access thoroughly blocked by tons of fallen rock. They knew there was equipment which could clear the mess, but when they discussed the problem . . .

"We don't know how to operate that machinery, and in any case there is no point in activating anyone who does, until we are certain there is something —or someone—out there."

As always it was Ayree's logic that cooled Enrahin's impetuousness, and realizing there was still not sufficient reason even to activate a minuscule few of the others, the male felt a terrible sense of loneliness as he and his mate trod through echoing tunnels toward Control One. Tightly, they held hands.

The blockages form a very strange pattern.

What do you mean?

True to her resolve not to say too much, even with secret-talk, Ayree ceased communication until they were back in the room with the winking displays. With all this flickering activity it was not difficult to imagine it as the measure of a living crew at work, instead of the reality of a soulless collection of components imitating what the two beings dearly wished could be.

"Control, have the optical circuits been repaired?"

AFFIRMATIVE.

"Please show us the anomaly."

The image was at first fuzzy with very little detail. But even before it cleared and sharpened, Enrahin and Ayree knew exactly what they were seeing.

"I not understand weason. Zey know ozer Silvers not near."

"David, if there is to be any chance at all for us to talk and them to listen, they must be convinced we are not the alien horrors they expect. So we start with the image of a ship similar to their own."

"Ah. What do zen?"

"At the proper moment we introduce them to two beings not unlike themselves: male and female, possibly a little inferior. The One Behind All, we inform them, has created these beings to assist in the mighty task of bringing order to the Universe."

"Beings cannot be Phuili. We too diffewent. Humans closer zough less hair. You say male and female."

"Exactly. Jase and I."

"I zink perhaps might work. But after—?"

"I wonder about that myself. Dammit Gia, I am no actor! What are we supposed to say to them anyway?"

"Right now, I haven't figured that out. But Jase, I do not want to order the destruction of those people if there is the slightest possibility they can be turned around. I may be the judge with powers of execution, but at this moment I strongly lean toward a recommendation of mercy."

There was a long silence. Kurber was obviously astonished, while David looked thoughtful. Then:

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"It is say all zings possible. Zank you, fwiend Gia, for wemind."

"Thank *you*, friend David."

Kurber was not so sure. "I wonder if anyone will deserve thanks when this is over," he commented gloomily.

"Is there any sign of activity on that ship?"

NEGATIVE.

"That does not prove anything. It has obviously matched our course and velocity—which is orders of magnitude beyond any coincidence."

"Enrahin, we have already discussed that. If that ship is like ours, then perhaps it has a Control like ours."

ALIEN SHIP TRANSMITTING. SIGNAL CONTAINING COMPARATIVE REFERENCES AND NUMERICAL DATA FOR POSSIBLE LANGUAGE TRANSLATION.

Enrahin hissed. "Language? But language is caused by life!" Face twisted in hate, the male skittered back and forth, eyes darting about him as if looking for a weapon—any weapon. "No!" Ayree cried, her fur fluffed in agitation. Trying desperately to cling to reason, she grabbed Enrahin and pulled him close. While her only motive was to somehow return her mate to a semblance of sane behavior, instead an irresistable biological urge overcame them both and they began to mate. As was normal with their kind, the mating was insanely violent, noisy, and over as abruptly as it started. In their temporary exhaustion they hardly heard the developing sequence uttered by Control.

. . . WES COM BEEP SHOD . . . WESH COMMUN BEENG SHOP . . . WISH COMMUNIC BEINGS SHIP . . . WISH TO COMMUNICATE WITH BEINGS ON SHIP. PLEASE REPLY. ARE YOU THERE . . .

Ayree flexed sore limbs and wiped blood off herself. Pain—a residual of ecstasy—revulsion, and curiousity were all components of a whirling confusion in her brain. *. . . hate . . . hate . . . hate . . . destroy . . . destroy . . . destroy . . .* The message of a thousand generations shouted wild from her genes. She looked at Enrahin. Like her he was a mess. But more noticeable was the strangeness of his expression. The fatigue was there, and still the fear. But the hate was gone, as if part of him had burned out from overload.

"Ayree." His voice was weak yet wondering. "Control has language. Yet Control is a machine. That is so, isn't it?"

"That is so," she replied gently. Oddly, as if echoing his overload, her own hate had subsided—though not quite gone. It was still there, seething deep at the edge of her awareness.

"But what if—" Enrahin lifted a hand in the universal sign of question, then let it fall. "What if there is life on that other ship? Is it possible they are . . . you know . . ."

She knew. And what he was trying to say chilled her. "*We* are the Giver's chosen instrument of the Great Work." Ayree said, realizing with shock she was saying the holy words as much to remind herself as her mate. "So whatever happens, whatever we see or hear—"

WE ARE CALLED HUMAN. WE ARE THE SWORD CREATED TO DESTROY THAT WHICH DEFILES THE ONE'S UNIVERSE. WHAT ARE YOU? IS THERE MORE THAN ONE SWORD?

It was almost too much. Enrahin

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

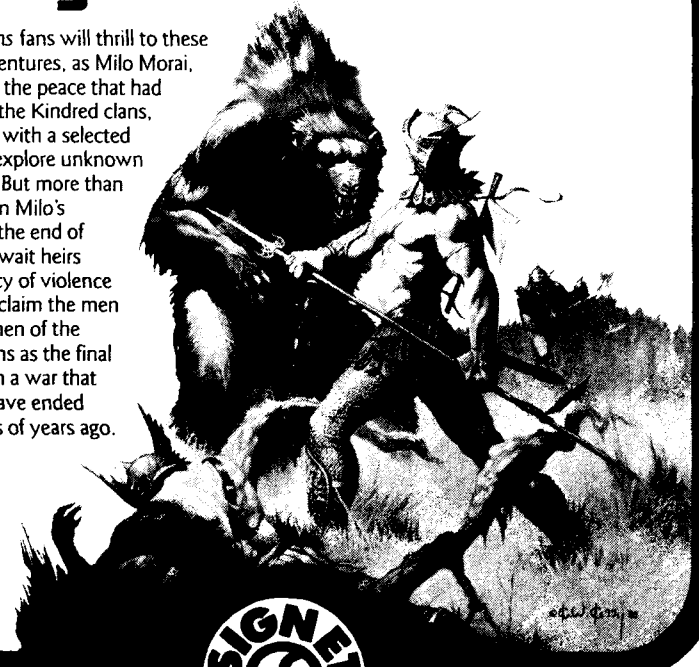
Ancient treasure and sudden danger
await Milo and the Horseclans
in the heart of a long-dead city

THE MEMORIES OF MILO MORAI

HORSECLANS #15

By ROBERT ADAMS

Horseclans fans will thrill to these new adventures, as Milo Morai, secure in the peace that had come to the Kindred clans, journeys with a selected band to explore unknown territory. But more than ruins lie in Milo's path. At the end of the road wait heirs to a legacy of violence ready to claim the men and women of the Horseclans as the final victims in a war that should have ended hundreds of years ago.
$2.95



SIGNET SCIENCE FICTION

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

seemingly did not react at all, which more than anything else indicated the extent of his sickness. Ayree, still sane though barely so, for an eternity of moments could only glare at Control's master panel as if its electronics had somehow become transformed into protoplasmic ooze. Finally, with a massive effort of will she forced herself to speak.

". . . show . . . me . . ."

One of the screens flickered into life. Two creatures, hand in hand, stared at Ayree. To her confusion they were not so much repulsive as merely ugly: about the same shape as she was but almost hairless, with protruding nostrils and slits of mouths. Their eyes were small and deeply recessed into their skulls. One was smaller than the other, with a greater development of chest. The smaller one spoke, its mouth parts making sounds which Control translated.

WE STILL WISH TO KNOW. ARE YOU ANOTHER SWORD?

Ayree moistened her mouth. "What," she asked with difficulty, "is the One?"

Her mind was functioning a little better now, enough for her to have reasoned that if they did not properly answer *her* question, then all doubts were resolved and she and Enrahin could proceed with whatever was necessary to destroy these strangers and their ship. But Ayree's hope for that simple solution was dashed as the smaller being replied, THE ONE IS THE MASTER OF THE UNIVERSE. THE ONE GAVE US THE TASK TO DELIVER ALL THINGS FROM THE SCOURGE WHICH IMITATES AND PROFANES TRUE LIFE. IN THIS WE ARE THE SWORD OF THE ONE.

Enrahin groped for Ayree's hand. *I am not as sick as you think.* "Perhaps—" Again it seemed he groped for words. "Perhaps in the Great Work, what we are is only a part. Perhaps—" He lapsed into helpless silence. *Ask them. How many are they?*

Ayree asked.

WE ARE AS YOU SEE. was the unexpected reply. *Two? In that ship? They are lying!*

HOW MANY ARE YOU?

"Two," Ayree promptly lied. "As you."

WE MUST MEET.

It was almost a relief to be able to speak the truth. "That will be difficult. All our surface access tunnels are blocked by fallen rock and we are trapped inside."

WE HAVE MACHINES. WE CAN MELT THROUGH TO YOU.

"It's certainly taking them long enough to react to our little bombshell." Vanderbrusse glanced at his watch. "Nearly a full minute and they haven't said a damn thing."

Still hand in hand, the two Silvers were wandering aimlessly about. Their gaze was open and fixed, as if going through an alien form of somnambulism.

"Perhaps we moved too fast. Talking with the devil is one thing. But having him come to you in person—" Kurber shook his head.

Gia had to agree. "Jase, I am afraid you have a point." She burst out, "My god, I think I have managed to mess up the whole thing!"

"Not perhaps so," David said. With soothing logic the little Phuili continued, "You have offer way fwom inside

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

of asterwoid. Zey too smart to wefuse us doing."

"Maybe, but only if we haven't already driven them over the edge." Kurber gestured at the screen. "Look at those two! Right now they are hovering between pragmatism and that insane purpose of theirs like a tug-of-war between evenly matched teams. If pragmatism wins out, then OK. I admit we still have a chance to turn them around. But if it turns out the other way, or even if the rope breaks and they go schizoid on us—then I say we have no choice except to blow them out of space before they can rouse their sleeping buddies."

It was a terrible choice and they all knew it. Communication had been established, and with time could perhaps lead to a kind of grudging acceptance. But the menace represented by the regiments waiting to be unleashed from the asteroid's core was an unstable component in an equation already weighted against Gia's desire not to be involved in another mass slaughter.

So we have decided?

We have decided.

It will be difficult.

That is so. But what else can we do? Perhaps for too long we have assumed our exclusiveness without properly considering the impossible vastness of the universe. The near destruction of our race surely indicates that the Giver must have more than one arrow to his bow.

It is a possibility we must consider. But even if the Giver did create other instrumentalities for the Great Work, we still cannot be sure of those who are about to come to us.

Agreed. So we must be prepared.

We must be prepared.

Gia's mood at the news of acceptance was a combination of relief and caution. As the work team and their equipment prepared to melt a tunnel from the point on the asteroid's crust indicated by the Silvers, she issued swift instructions.

"David, as soon as your crew is within a meter of breakthrough, Jase and I will go down and take over. Are you sure the other access is well enough camouflaged?"

"Silvers have see and not know what zey see. What looks wockfall is not. So we use as Silvers wait at place where new tunnel to come."

"Good. And if things work out as I hope, your people can withdraw by the same route. But if the situation turns ugly—"

"We watch. If need, we act. You and Jase be safe."

Later:

So you are sure the strangers cannot read secret-talk?

Enough that I am convinced it is our greatest advantage over them, though I admit we must be circumspect in its use. We must not arouse their suspicions with too many silences.

Agreed.

"They are close."

"Very close. In a few moments they will be before us."

"When did you deactivate the defense screen? I did not see you anywhere near the panel."

"There was no need. The screen was already down, presumably a result of the phase-shift failure. The event was, after all, catastrophic enough to collapse

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the exit portals." *And it is that I fear. Why only those tunnels which lead to the surface? Surely, a strangely selective effect.*

Coincidence is often strange.

"Look! The wall is glowing!"

"Then they are here. Better stand clear in case of rock splinters."

Ayree and Enrahin backed into the relative safety of the entrance of Control One as with a hiss and a rumble, part of the corridor wall disappeared. Dust billowed outward, was almost immediately thinned as exhaust vents opened. Cautiously the "humans" emerged out of the jagged opening and halted. The small one spoke, its thin voice eerily echoing Control's translation. I AM GIA. THIS MALE IS JASE.

They were indeed ugly. But also strangely pathetic with their squashed, pink-skinned faces and awkwardly jointed limbs. Ayree was surprised she could feel pity along with her instinctive revulsion. "I am Ayree," she responded. "This is Enrahin. What do you offer?"

OUR PURPOSE IS TO SERVE THE ONE. WE THINK IT IS YOUR PURPOSE ALSO. IT IS CONFUSING TO US BECAUSE WE DID NOT KNOW THAT OTHERS SHARE THE HOLY CAUSE.

Enrahin signaled, *That at least is understandable. It is our own dilemma.*

Ayree repeated. "What do you offer?"

WE OFFER OURSELVES. WE OFFER OUR SHIP AND ALL IT CONTAINS. THE ONE'S UNIVERSE IS MIGHTY AND MUST BE CLEANSED. THERE CAN BE NO OTHER WAY.

All it contains? Challenge him!

"I asked you before. I ask you again. How many are you?"

There was a hesitation. Then: IN OUR SHIP. THERE ARE MANY THOUSANDS IN DORMANCY CHAMBERS. THEY CAN BE RESTORED. BUT ONLY IN THE ONE'S SERVICE.

"Ayree! Praise the Giver, I believe they truly are our soulmates in the Great Work!" *Yet why do I feel so uneasy? What is wrong?*

Perhaps they are too much for logic to expect. We must probe deeper.

"There is a better place to talk than in this corridor." Ayree pointed, then she and Enrahin turned and walked slowly into Control One. *Is this wise?* her mate asked.

Do they know about this space? Ayree countered.

They should not.

Exactly. Then what I am about to do should provoke no reaction other than perhaps curiousity. Watch them closely.

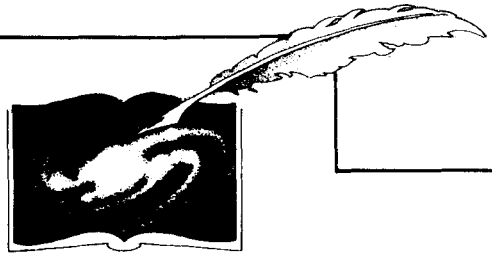
At first, the humans remained merely hesitant. But as the two Silvers continued past the various control displays and approached the glowing blue-orange panel at the far end of the chamber, Enrahin noticed that the hesitancy seemed to become a distinct nervousness. As if by unspoken agreement, the humans suddenly began to close the distance between themselves and their hosts. Enrahin felt Ayree's hand tighten. *Prepare.*

His pulses raced as her suspicions became his. *I am ready.*

At the panel, Ayree casually lifted her free hand upward toward the illuminated buttons.

STOP HER! roared Control, translating the male's mouthings as both humans lunged forward.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



About L. RON HUBBARD's

Writers of the Future Contest

by Algis Budrys

The Writers of the Future contest substantially rewards at least twelve talented new speculative fiction writers each year. With no strings, every three months it confers prizes of $500, $750 and $1,000 for short stories or novelettes. In addition, there's an annual Master Prize of $4,000. All awards are symbolized by trophies or framed certificates, so there's something for the mantelpiece too.

There's also a Writers of the Future anthology, which I edit. (There was one last year, and there's another one just out as you read this.) It offers top rates for limited rights in the stories. These payments are in addition to any contest winnings. The anthology is distributed through top paperback book retailers everywhere, and is kept in print and on sale continually. All that's required to win or to be a finalist is a good new story, any kind of fantasy or science fiction, no more than 17,000 words long, by writers whose published fiction has been no more than three short stories or one novelette. Entry is free.

The contest deadlines in 1986 are March 31, June 30, and September 30, and there are First, Second and Third prizes for each three-month quarter. At the end of our year, a separate panel of judges awards a Master Prize to the best of the four quarterly winners. So one person will win a total of $5,000. Judging panels include or have included Gregory Benford, Stephen Goldin, Frank Herbert, Anne McCaffrey, C.L. Moore, Larry Niven, Frederik Pohl, Robert Silverberg, Theodore Sturgeon, Jack Williamson, Gene Wolfe and Roger Zelazny, as well as me. Matters are administered so that the judges are totally independent and have the final say.

It seems hardly necessary to embellish the above facts with any enthusiastic adjectives. This contest was created and sponsored by L. Ron Hubbard and the project will continue in 1986 and try to do some realistic good for people whose talent earns them this consideration. For complete entry rules, and answers to any questions you might have, write to the address given below:

Don't Delay! Send Your Entry To:

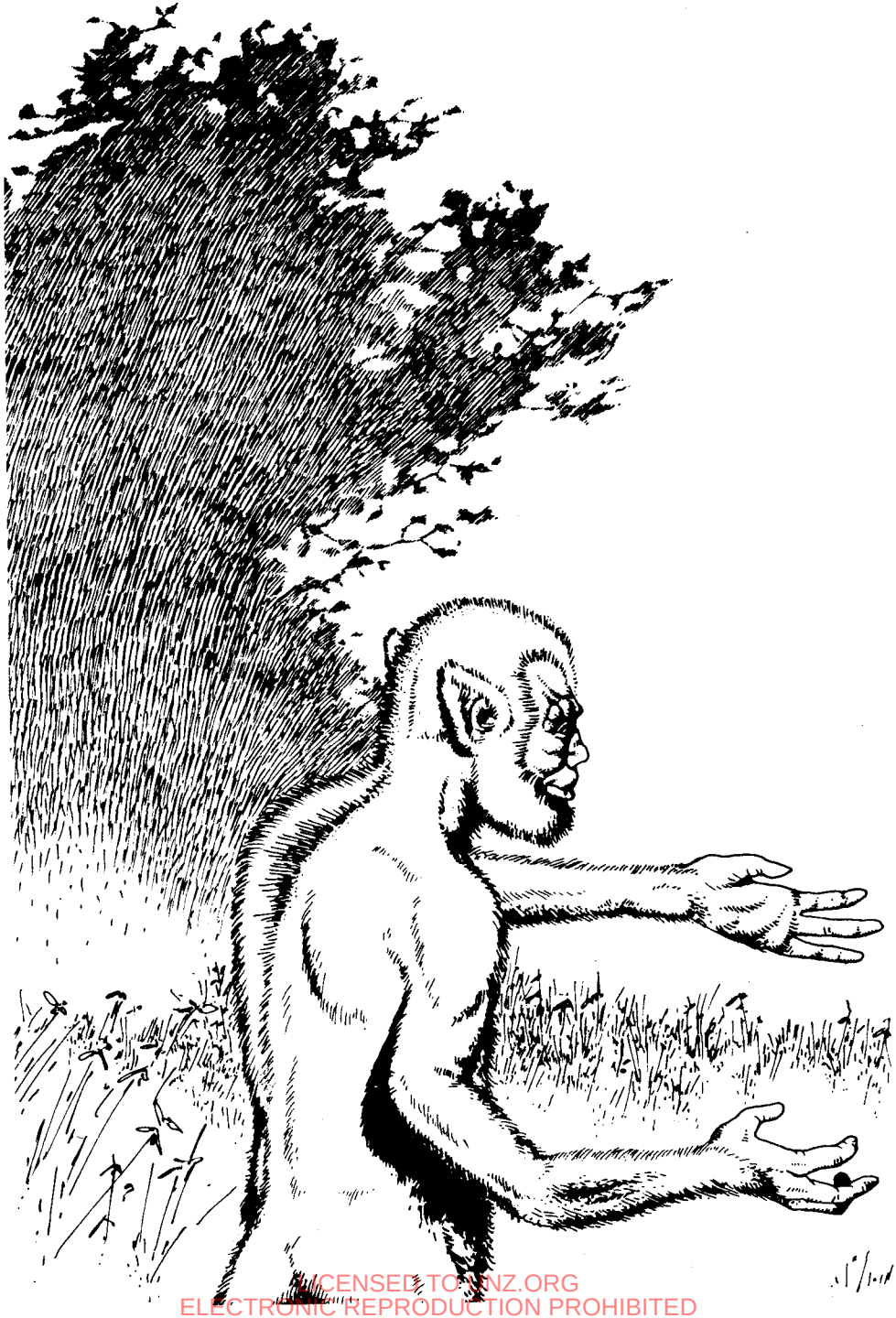
Writers of the Future Contest
2210 Wilshire Blvd., Suite 343
Santa Monica, CA 90403

Or, you can find the rules—and examples of winning stories, plus informative essays by some of the judges—in either of the Writers of the Future anthologies. They're original paperbacks and cost $3.95 each.

Good luck.

—Algis Budrys

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



LICENSED TO NZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

They know! Screaming with primeval hate, the Silvers unsheathed their claws and charged to intercept the humans. It should have been an easy slaughter. The humans were obviously weak and biologically not equipped to face the natural killing machines Ayree and Enrahin were by birthright. But as gray-furred arms swept lethal arcs across where unprotected throats should be, the humans had already dropped prone below a sudden fury of sizzling beams. Enrahin did not have time even to know what killed him. His head half blown from his shoulders, he simply pitched forward in a bloody heap. Ayree cried once and fell across her mate. She twitched a few times and then lay still.

Their hot weapons still at the ready, two armed Phuili edged into the room. Then David came in. His alien expression showed strain but was otherwise unreadable. He squatted next to the bodies.

"Not like fail," he said sadly.

Gia studied the photograph. "Those?" she asked, pointing.

David nodded. "Tiny sensor pads. Vewy sensitive, much nerve network behind. All over palm of hands. When hold hands, Silvers communicate near good as talk."

Kurber asked, "But what would be the evolutionary need? I noticed nothing wrong with their ability to voice communicate."

"Combative," Gia murmured, half to herself.

"Beg pardon?"

"Try this on for size. Suppose the Silvers have a very long history, perhaps even as long as your people's, David. Also suppose that their world was an incredibly savage place almost exclusively populated by toothed and clawed predators. So to survive long enough to evolve sentience, the Silvers ancestors had to become even more savage than the rest. Then, as they attained dominance and eliminated most of the competition, those ancestors increasingly turned their savagery on each other. Still they continued to evolve, though obviously it would be a painful process. Therefore a question. In such a situation, given enough eons of continuous combat against natural enemies and then against one's own kind, what kind of personality trait would you expect to develop?"

Kurber frowned. "Paranoia?"

"You said it, dear. Paranoia. But taken to such an extent, and over such a period of time, that the physical ability to 'secret-talk' became as much a part of life as eating and breathing."

David nodded thoughtfully. "But Gia fwiend, does not act of hold hands what you call 'give-way?' "

"Not if that particular behavior is also a basic instinct," the expediter replied. "If it is normal for Silvers always to grab hands with anyone within reach, who then can tell who is secret-talking with whom?"

"And zeir anti-life cwusade?"

"A natural extention of what they are. What originated as a survival mechanism on one planet has exponented into a threat against every living thing in the cosmos. As far as the Silver People are concerned, *all* other life is threatening and must therefore be eliminated. From backyard, from planet, even from the universe itself, it's as simple as that."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Space to Work
Writers and readers of science fiction recognize space as the next frontier. You have the unique opportunity of becoming one of its pioneers. The L5 Society wants to make space settlement a reality. Your support of our non-profit, educational activities will make that possible.
Write us for free information or simply send $40 for annual regular membership and show your commitment. It really is up to you.
L5 Society
Dept. DV, 1060 E. Elm St., Tucson, AZ 85719
Space for Everyone to Live, Work, and Play
A public service announcement.
Artwork by Mark Maxwell

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

As she spoke, Gia also knew she was rationalizing. The hardest decision of her life had been the order to vaporize the Silvers' asteroid-ship. Now the asteroid, its thousands of needle-ships and the tens of thousands of intelligent beings it was bearing toward what they considered was their holy destiny—all that was gone. Also eliminated—at least from the forseeable future—was the chance to correct a great natural tragedy. In their loyalty and obvious love for each other, Gia had seen qualities in Ayree and Enrahin worth saving. And then she had been forced to destroy them. *In some ways, God, you have a lousy sense of humor.*

"We haven't burned all of our boats, you know."

Startled, Gia ejected out of her depression. "What are you talking about?"

Kurber looked uncomfortable. "We'll find them. If they are to be found, that is."

"Zis one agwee," David said. Unlike Kurber, who had misinterpreted Gia's malaise, the Phuili's deep empathetic sense had enabled him to know and understand his human friend's intensity of feeling. Nevertheless he followed Kurber's lead as he pointed out. "If ozer asterwoids, zey pwobably on course for ozer suns which near. Also because pwimitive dwives pwobably fail as zis one, zen easy to know appwoximate place which be."

It was a correct and necessary interpretation which Gia had already determined would be in her report when she returned before Giesse Frobert and his committee. One fact was certain, however. Gia Mayland would quit Expediters and even Earth itself rather than be involved—even remotely—with the killing she knew was to come. Only Major Gostorth, Mary, and the other shock troops from Groombra Four, would be happy with the outcome of this particular exercise.

David repeated, "As alweady say, not all lost."

"I think—" Gia began, then stopped. Though it had happened before, in other circumstances, the shared sense of *knowing* which passed briefly between her and the Phuili left the expediter slightly breathless with its intensity. Whatever David was referring to had, she now knew, nothing at all to do with the possibility of finding other asteroid-ships.

She sought Kurber's hand and interlocked her fingers with his. "David. What is not lost?"

David told her.

And suddenly there was hope.

"How many?" Giesse Frobert asked.

"Six," Gia replied.

"How are they developing?"

"Very well, apparently."

"And when will they be born?"

"About thirteen months from now. According to the Phuili biologists, normal gestation is only half that, but the mortality rate is probably high. With the extended time, they expect their artificial uterus will deliver six healthy little Silvers."

"What about the mother?"

Gia looked down. But not before the Chairman detected a suspicion of moisture in her dark eyes. "Ayree was brain-dead. They kept her body functioning

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

only until the embryos could be safely transplanted."

"How long a time was that?"

"Several weeks. She and her mate were then given a ceremonial space burial. I insisted on it."

"So I heard," Frobert said dryly. The Chairman paused a moment, his broad face impassive. "I understand Expediter Kurber returned with you."

"Yes sir." Unexpectedly, the woman blushed. "We are considering a . . . ah . . . cohabitation contract."

Frobert turned to the man at his side. "Peter, do you know about this?"

The director of Expediters grinned. "I am encouraging it."

And he's behaving like the cat who caught the canary, the old man grumbled to himself. He cleared his throat. "Expediter Mayland. Director Digonness. I do not like being maneuvered into situations over which I have no control. However, in these somewhat exceptional circumstances, and cognizant of Expediter Mayland's stated intent to resign should I do otherwise, I accept the director's recommendation that Expediters Mayland and Kurber be appointed to Project Alchemy. I trust that is satisfactory?"

"Eminently so," Peter Digonness declared gravely.

Gia merely bowed her head; as much to conceal her swelling emotions as to indicate acquiescence. She wondered how Jase would react when she told him. *Bless him,* she thought. *He too will probably turn away, especially being a male. The poor dears are not supposed to display such feelings.*

"Alchemy?" the Chairman was asking. "I do not understand the relevance."

Digonness said seriously, "I think, sir, you should ask Expediter Mayland about that one. Like so many other things, it was her idea."

Gia managed a weak smile. "Alchemy. The transmutation of base metals into gold." Abruptly her eyes flashed and she added fiercely, "Or in our case, the transmutation of an intelligent species!"

For long seconds, Giesse Frobert, Chairman of the World Union Council and therefore master of mankind's highest political office, studied the flushed expediter. With a grunt of effort, he then ponderously heaved his bulk out of the chair and walked to the door. Just before he went out, he turned.

"Alchemy, you say?" He chuckled. "My dear, if you pull this off, and if I am still around when you do—" The chuckle became a rumbling laugh. "My god, I will recommend you for Saint-hood!"

How long before Earth and Phuili again needed the services of the psychopaths of Groombra Four, was still only an informed guess. Thousands, tens of thousands, or perhaps even millions of the deadly Silver People were out there between the stars, dreaming away the light years until they could waken to begin their savage crusade. But now there seemed at least a reasonable possibility they could be located and destroyed before Day One of Armageddon. For most of those who knew, even for those among them who were sickened by the necessity of having to accept genocide as a viable solution,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Project Alchemy seemed at best a wishful fantasy.

But Project Alchemy was not a fantasy.

On a small previously uninhabited world beyond the Hub, guarded by a screen of warships whose commander had been instructed to destroy without question not only any unauthorized vessel which came within ten diameters of the planet, but also anything which came up *from* the planet, six lively youngsters were being educated, studied, and above all, loved.

Perhaps the instructions in their genes would ultimately overwhelm what was being learned within their furry skulls. Those of two races who were their guardians and teachers had, of course, dedicated their lives to making it otherwise. But it was a delicate edge they all trod; balanced between the time-consuming work with the youngsters on the one hand, and the near certainty on the other that the warriors of Groombra Four could be performing their grisly work before Alchemy had a chance.

It was, in a sense, a race. And the prize was much more than the continued existence of an intelligent species. It was also a race for the soul of a civilization.

Careful not to damage its complex circuitry, Gia gingerly wriggled her hand into the glove. Then she took the hand of the graceful child at her side. Wide eyed and radiating innocence, Emma looked at the expediter trustingly. But Gia was wary. The children were born actors and could convince the most profound skeptic that black was white. So this, the first test of *secret-talk* between Silver and human, was infinitely more than a mere indication of the child's sincerity. Within the next few moments, ten years of work would either be triumphantly verified or shattered for ever.

"Do you love me?" Gia asked.

Emma answered promptly. "Of course I love you. You are mother."

Gia interfaced with the computer. *Do you love me?* she signaled via the glove to the natural sensors on the palm of the child's hand.

Emma was startled and tried to pull away. But the woman held firm. *Do you love me?* she repeated.

The child tugged again, tentatively. Gia relaxed her grip but did not let go. The child trembled and crept close. A silken arm encircled Gia's neck and a furry head pressed into the hollow between neck and shoulder. Then:

I love you, momma Gia.

All was well.

The ambassadors were ready. ■

● All of the books in the world contain no more information than is broadcast as video in a single large American city in a single year. Not all bits have equal value.

CARL SAGAN

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Jay Kay Klein's biolog

Artists are popularly believed to get more out of life than other people, their creative urges being buffered with wine, women, and song. Robert F. Walters does indeed give the impression of living each moment for the joy of it. This accomplished from his home in Philadelphia where he was born though he was raised in nearby Wilmington.

Around the age of five, he decided he wanted to be an illustrator, and at twelve started hanging around the studios of well-known illustrators. Among his early exemplars were Frank Schoonover, Howard Pyle, N.C. Wyeth, and Maxfield Parrish. Chesley Bonestell and Charles R. Knight were more distant figures but especially influential.

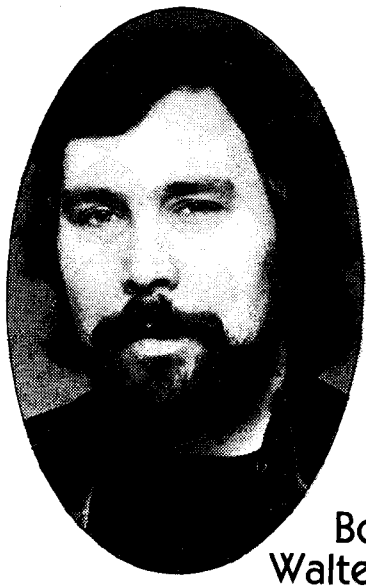
He took advanced training at the Pennsylvania Academy of Fine Arts. Though determined to succeed in the art world, he had to take whatever odd jobs came his way, as so many struggling writers and artists do. None, surely, has held an odder job than assistant elephant keeper at the Philadelphia Zoo!

Nearly fifteen years has now elapsed since Bob has had to do anything other than artwork. That in itself has required odd jobs, such as drawing storyboards for TV commercials and holding down a regular position as art director for a while. On the flip side is Bob's scientific work in depicting the flora and fauna of the past. He is considered one of the foremost paleontological restoration artists in the United States. In 1980 he illustrated a full-color children's book *Dinosaurs—the Terrible Lizards* (E.P. Dutton).

The summer of 1985 he took off from other assignments to be the chief illustrator of the multi-million dollar "Discovering Dinosaurs" exhibit newly opened at the Philadelphia Academy of Natural Sciences. Similarly featured is Bob's work in a paleontological art show touring during the summer of 1986. Bob doesn't draw such strange creatures just artistically, or even plausibly; he has to know their original makeup as determined by scientific studies, basing his drawings on inferences drawn, for example, from marks left on skeletal remains by once-attached muscles.

Long a science fiction fan, his first SF illustration was a spaceship done in nursery school. His first *Analog* cover (May 1985) was a lunar landscape, complete with "bulldozer." Bob's preferred mediums are acrylics, pen and ink, and pencil. In 1985 he received the Best Magazine Cover award from the Association of Science Fiction Artists for the Dec. 1984 *IAsfm*.

A childhood dream came true in 1984 when he exhibited, first alongside Chesley Bonestell's work in the "Visions of Other Worlds" exhibit celebrating NASA's 25th anniversary, and then with Charles R. Knight in "The Dinosaur Show" at an exhibit of famous paleontological art held by the Boston Museum of Science. ■



Bob Walters

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

James E. Oberg

SHUTTLE DOWN: FICTION TO FACT

For a tiny speck in the vast southeastern Pacific Ocean, the exotic Isla de Pascua—"Easter Island" in English—has become the nexus of a cosmic-scale dispute. A new NASA plan involving the island is supposed to help save the lives of space shuttle astronauts in distress. Two works of science fiction deal with the issue: in one, the author entertains and enlightens, while in the other, anxiety and hatred are the desired effect on audiences.

To ordinary readers, Easter Island is best known as the location of giant mysterious stone statues whose origin remains obscure. Norwegian explorer Thor Heyerdahl examined the puzzle in the 1950s, and in fact plans to return early this year. He had concluded that the 46 square mile island had been the home—and battleground—of various ethnic groups, some from Polynesia and some from the South American mainland. Since their discovery by European explorers late in the 1700s (on Easter Sunday, hence the island's name), the islanders have endured further deprivations including slave raids, famines, and plagues. Today, about a thousand people live in the village of Hanga-Roa, on the island they call Rapa-Nui. It is one of the most isolated spots on Earth, still partially enshrouded in the mists of its own mysterious past. The Space Age is about to change all that.

Last summer NASA announced it was negotiating with the Chilean government (which owns the island in question) about the establishment of an emergency space shuttle landing facility there. The controversial angle was that such a landing field would be needed for and only for southbound launchings from the new shuttle port at Vandenberg AFB in California—and such flights were strongly associated with new military space activities. Would that give the Easter Island plan a military significance and tie it to "Star Wars"?

Agreement had been reached within a few months. According to official announcements, the existing airfield on Isla de Pascua, Mataveri Airport, would be upgraded by the extension of its runway and the addition of shuttle-compatible guidance equipment.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Mataveri Airport would thus become one of the Pacific equivalents of the launch abort sites which rim the eastern shore of the North Atlantic, downrange from the Kennedy Space Center in Florida. Depending on the space shuttle's launch azimuth (which can range from due east to directly northeast), one of these airfields is designated the "Trans-Atlantic Landing" ("TAL") abort site. For the first two dozen shuttle missions in 1981–1986, TAL sites have included Dakar (Senegal), Rota (Spain), Zaragoza (also Spain), and Köln-Bonn (West Germany).

These sites are intended for use if the shuttle experiences engine trouble during the middle to latter part of its eight-minute climb uphill into orbit. For the first few minutes, trouble would result in a "Return-to-Launch-Site" ("RTLS") abort; for the last few minutes, trouble would force an Abort-Once-Around ("AOA") with landing at Edwards AFB, or—if the spaceship can divert enough unburned fuel into the remaining good engines—an Abort-To-Orbit ("ATO") at an altitude lower than originally planned (this last failure is exactly what happened on the Spacelab-2 mission last July). But if a second engine failure occurs during a particularly bad interval, the spaceship is too far out to turn around yet doesn't have sufficient performance to make an orbital abort—so it's got to land somewhere downrange, and the TAL site is the prepared emergency runway.

For southbound launchings from Vandenberg, two airfields have been chosen at about the same downrange distance —except that they are called "Trans-Pacific Abort" ("TPL") sites. One site at Hao in French Polynesia is along the track followed into "sun-synchronous" near-polar retrograde orbits; for missions heading southeast into near-polar posigrade orbits (inclined 72 to 80 degrees), the only suitable piece of dry land with any airstrip at all is Isla de Pascua.

According to NASA plans, a fifteen-man team from the Kennedy Space Center will arrive at the chosen TPL island site a week before launch. They will check out the equipment and communications link, and stand by for the launch. As soon as the spaceship is safely in orbit, they will pack up and return home—the site is for launch abort only, and any emergency return from orbit has dozens of more preferable airfields around the world.

For the first California launch, the only special gear at Mataveri will be some navigation aids and lights to define the shuttle's final landing approach and glideslope. But by the time of the second polar orbit mission, airplane turnarounds and a 1500-foot runway extension are to be completed.

The treaty between Reagan and Pinochet officials, and the "space militarization" angle, provided Moscow propaganda organs with a golden opportunity, if not heaven-sent than at least space-sent. From the moment this new NASA project became public, there's been a shrill stream of hysterical accusations against NASA and the Chilean government. While the campaign may have originated in Moscow, it fell

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

on fertile ground among resistence groups inside Chile (who may be forgiven any cynicism about the true motives and intentions of the Pinochet military regime) and among traditional left-wing groups around the world (such as the "Committee of Friends of the People of Chile" and the "Progressive Space Forum").

The gist of the accusation is a science fiction nightmare: the project really intends to establish a large-scale nuclear-armed military base on the island, bulldozing the priceless statues and enslaving the helpless natives. According to Soviet statements, the plan "puts Chile in the nuclear line of fire" by enlisting it in an alleged aggressive Reagan program to prepare a nuclear sneak attack on Russia.

Along these lines, Moscow newspapers have run a series of bizarre cartoons showing the statues enshrouded in barbed wire and military helmets (one is shown to whisper, "Now our secrets will be military secrets"), with battleships and bombers filling the background. Soviet newspaper articles and television broadcasts have been repeating the alarming and inflammatory story of the latest expansion of the Yankee evil empire.

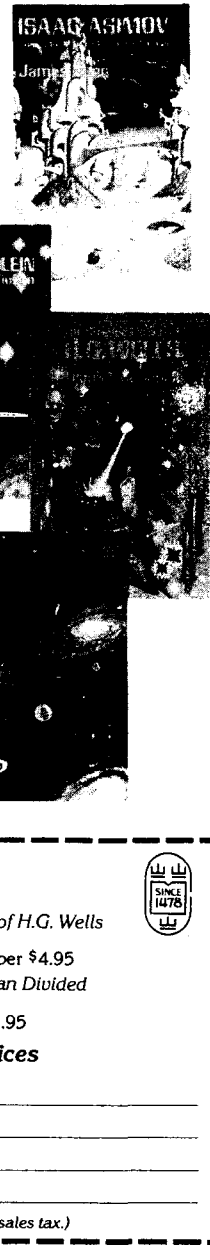
A Moscow television show called "International Situation" cried out in alarm on June 21, 1985 that "the up-to-date navigation equipment intended for installation on the island is used also for guiding missiles launched from nuclear submarines." On July 11 Radio Moscow commentator Igor Charikov alerted his listeners to the dreadful fact that "American experts have determined that from there it will be very convenient to control the accuracy of guidance of nuclear missiles launched from bombers and from submarines to ground targets." Noted TASS on July 10, "It is obvious that the setting up of an Air Force base will turn the island into a U.S. colonial enclave. Invaluable monuments in that natural open-air museum will be destroyed and the island's ecology will be disrupted during the construction of such a base."

Other facets of propaganda campaigns have become involved. According to press reports, the Stockholm International Peace Research Institute—a well-known and widely-respected pro-disarmament organization—has "discovered" that the NASA plans at Mataveri are only a cover story for a secret Pentagon plot to base anti-satellite weapons in the south Pacific. The reasoning is that the runway, even when extended as planned, will not be as long as standard shuttle landing runways—so it must be meant for use by the F-15 jets which carry ASAT missiles and which could hit Soviet "Molniya" communications satellites when they dip close to the Earth near the island.

This preposterous claim—gleefully echoed by the Soviet media and by anti-junta Chilean groups—founders on the fallacy of runway length. Shuttles launched southward from California are about 15% lighter than those launched eastward from Florida, since the latter get a free boost from Earth's rotation and hence can carry heavier payloads. Lighter vehicles allow landings at proportionately shorter runways, and the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Discover the Facts Behind the Fiction



Heinlein, Asimov, Stapledon, Wells—what made these great writers produce their astonishing works of fiction? What events in their own lives shaped their visions of the future? What cultural and scientific changes influenced them? And what do their sometimes bizarre tales really have to say?

Now you can gain a deeper appreciation of the work of your favorite authors with the **Science Fiction Writers** series. Find out:

- How a stormy adolescence set against the cataclysmic 1930s caused Isaac Asimov to embark on the *Foundation* series
- How a case of tuberculosis and an ad in *Thrilling Wonder Stories* launched Heinlein's writing career
- How Darwin influenced H.G. Wells
- How Olaf Stapledon's richly inventive but difficult fiction influenced Arthur Clarke, Poul Anderson, Kurt Vonnegut and many others.

Each volume in the **Science Fiction Writers** series treats an author of distinction. Together the volumes do full justice to science fiction as a pervasive force in western culture.

Special Offer!

To: Oxford University Press
Dept. ECAB, 200 Madison Ave., New York, NY 10016

Please send me:

Isaac Asimov: The Foundations of Science Fiction by James Gunn
☐ cloth $18.95 ☐ paper $6.95

Robert Heinlein: America as Science Fiction by H. Bruce Franklin
☐ cloth $22.50 ☐ paper $4.95

The Science Fiction of H.G. Wells by Frank McConnell
☐ cloth $22.50 ☐ paper $4.95

Olaf Stapledon: A Man Divided by Leslie Fiedler
☐ $19.95 ☐ paper $7.95

Order 2 or more books and get 20% off list prices

Name _____

Address _____

City _____

State _____ Zip _____

I enclose my check/money order for $_____ *(Please add appropriate sales tax.)*

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

scale-down factor is the same. Mataveri even now is good enough; with the planned extension, it will be a full-fledged shuttle-capable runway.

Project engineers associated with the actual NASA effort have expressed bafflement and amusement at the Soviet claims. The navigation gear—primarily a so-called "TACAN" system which is also usable by civilian airliners—will be installed in the existing Mataveri Airport tower and will be operated by Chilean officials. There are extremely strict land-use statutes in force, designed for archeological preservation, and these are to be rigidly enforced for the runway modifications. Chilean officials have even briefed Heyerdahl on these steps (he has expressed complete satisfaction to this author). NASA will probably also build a small warehouse that will include an office to be used by the visiting team. This NASA team will stay in a hotel in Hangaroa; by formal NASA policy, all the members will be civilians.

If NASA and the Chilean government were surprised by the vicious Soviet propaganda onslaught and might have been justified in thinking it was "right out of science fiction," author G. Harry Stine was not surprised—since it was indeed almost right out of his own science fiction! Five years ago (December 1980 through March 1981, in *Analog*) he published *Shuttle Down*, dealing with an emergency shuttle launch abort to Easter Island (the book was reissued by Del Rey in December 1985), under Stine's fiction nom de plume, Lee Correy. A key element of the book's plot involved a phony Soviet claim that the landed shuttle contained a nuclear anti-satellite weapon and that Chile had better impound the spaceship or Soviet military forces would do it for them (and at the close of the book, they try to do exactly that).

How could he have so accurately forecast the spirit of the Soviet response to a shuttle landing on Easter Island? Stine told his secret: "The Soviets are the Soviets," he explained, "and they basically haven't changed in two or three hundred years that I know of." Their reaction, in other words, was completely in character and so totally predictable: "lie like hell."

In the light of recent developments, Stine has become something of a hero to the Chileans. He has been widely interviewed and has written some feature articles for local newspapers. At some point he may even go to Easter Island. "I'm kind of upset," he complained to me, "that the last NASA inspection team didn't take me along as technical consultant."

Stine did equally well in his prediction of engineering problems associated with recovering a downed shuttle from Mataveri Airport. In his book, the landing ocurred without advance preparation, so everything had to be brought in piecemeal to bootstrap transportation capabilities up to a level where the shuttle could be flown out atop the modified 747 carrier aircraft. Stine showed a crisp, coherent appreciation for technological, logistic, and diplomatic problems, and although his book angered some current actual NASA bureaucrats

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

by portraying some fictional future NASA bureaucrats as unimaginative, careerist, by-the-book paper pushers, *Shuttle Down* received the ultimate in bureaucratic compliments by being absorbed amoebalike into current NASA planning for just such an eventuality.

One feature discussed in the book involved how to transport and assemble a crane capable of lifting the hundred-ton shuttle onto the top of the carrier aircraft. It turns out that NASA used imagination and forethought when, at the New Orleans Worlds Fair in 1984, it brought the shuttle "Enterprise" in as an exhibit. It was more than mere show: the operation involved practicing the setting up of an airlifted crane to unload and later reload the shuttle from the back of the carrier aircraft at Mobile, whence it was barged to the fairgrounds in New Orleans. The New Orleans operation was actually intended as a practice retrieval of a shuttle from some remote landing site, such as Easter Island. There, the natives had long ago developed their own techniques for moving fifty- to eighty-ton statues, so if ever NASA has to move a hundred-ton spaceship, it really won't be all that much of a technological advance!

But in the case of the Easter Island and the space shuttle, reality plays no second fiddle to science fiction in terms of excitement. The Soviet propaganda threats are serious and may portend diplomatic pressures on other host countries worldwide which allow different kinds of support of space shuttle missions. Chile's political future is volatile, too, and the Soviets evidently would like nothing better than to have some successor regime renege on the Mataveri Airport agreement. In such a case, certain abort modes from Vandenberg would spell death for the astronauts, since the shuttle almost certainly cannot be successfully ditched at sea. The United Nations sponsored a treaty on the rescue of distressed astronauts and cosmonauts, and both Chile and the USSR are signatories—but for the sake of good propaganda, it seems, Moscow is repudiating the spirit of this agreement, at least as far as Vandenberg launchings are concerned.

Furthermore, the entire association of "Star Wars" with all Vandenberg shuttle flights is illegitimate to begin with, according to experts familiar with the traffic manifest planned for future shuttle missions. Traditionally, half of all Vandenberg expendable launches have been for military observation satellites, while the other half are split evenly between scientific and applications payloads. Shuttle missions will follow about the same proportions. On the other hand, for space technology demonstrations which prefer as large a payload as possible, launchings from Florida would be preferable since up to three times as much cargo can be hauled into orbit. Such military shuttle missions, along with military vehicles bound for 24-hour orbits, will continue to come from Florida even after the California site becomes operational.

It also turns out that the traditional reconnaissance satellites bound for so-called "sun-synchronous" orbits (with inclinations of 104 to 108 degrees) will

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

be launched on azimuths slightly west of due south, which allows them to make emergency landings on the island of Hao in French Polynesia. A large French military airport is available there. Launchings which must rely on Mataveri Airport are those with ascent azimuths slightly east of due south, and such missions are usually going to be research flights which will be in the wrong orbit to deploy traditional spy satellites anyhow.

So if ever Easter Island is needed to save the lives of a shuttle crew, they will quite likely have little or nothing to do with "Star Wars." Much more probably they will be on a scientific Earth resources survey mission, or deploying satellites with that same purpose. In line with NASA foresight, prompted perhaps by the imagination of a science fiction novel, the astronauts would have a good chance of surviving a launch abort by performing a trans-Pacific abort to Mataveri.

Meanwhile, cynics may conclude that if the Soviets had their way, the endangered astronauts should die. For their part, The Soviets may just prefer to believe they are engaged in some harmless pot-shotting at propaganda targets of opportunity. There really aren't any barbed wire encampments, weapons bunkers (nuclear or otherwise), warships and warplanes, lootings of ancient monuments, or rapes of innocent natives—it's all just part of a day's work for professional propagandists whose lives will never have to depend on whether or not some people take them seriously and react to the phantom American crime by opposing the landing agreement. Such landing agreements exist because of the very real possibility that the lives of some future space crew may depend on it, so a cosmic-scale war of words over Easter Island is important, and it may be no exaggeration to point out that human life may someday hang in the balance over its outcome. ■

●The stars in our sky are more numerous than all the souls which have departed this earth since the time of Adam, and their orbits and velocities through the heavens faithfully obey a great code of law. Earth's scientists can quote and explain this code in great detail—until you ask, "Whence came these laws?"

Rear Admiral D.V. Gallery

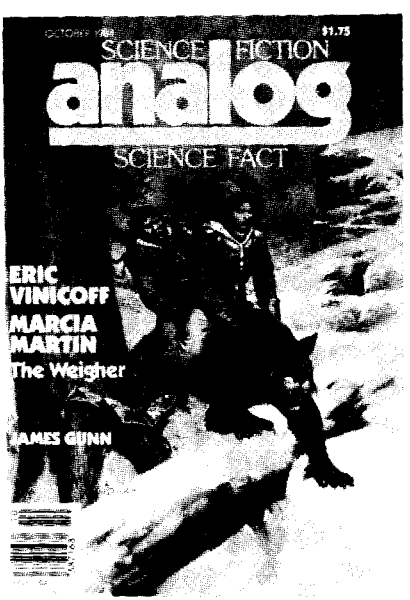
LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

THE PAST, THE PRESENT, THE FUTURE, THE UNKNOWN.

SUBSCRIBE NOW AND SAVE UP TO 44% OFF THE COVER PRICE

CALL TOLL-FREE 1-800-247-2160

(Iowa residents Call 1-800-362-2860)



YES SEND ME

☐ 8 Issues for only $11.97

☐ 18 Issues for only $19.97

SCIENCE FICTION
analog
SCIENCE FACT

P.O. Box 1936, Marion, OH 43306

Name _____

Address _____

City _____

State _____ Zip _____

Please allow 6-8 weeks for delivery of first issue. Outside U.S. and possessions 8 issues for $14.97. 18 issues for $24.97. All foreign orders must be paid in advance in U.S. currency

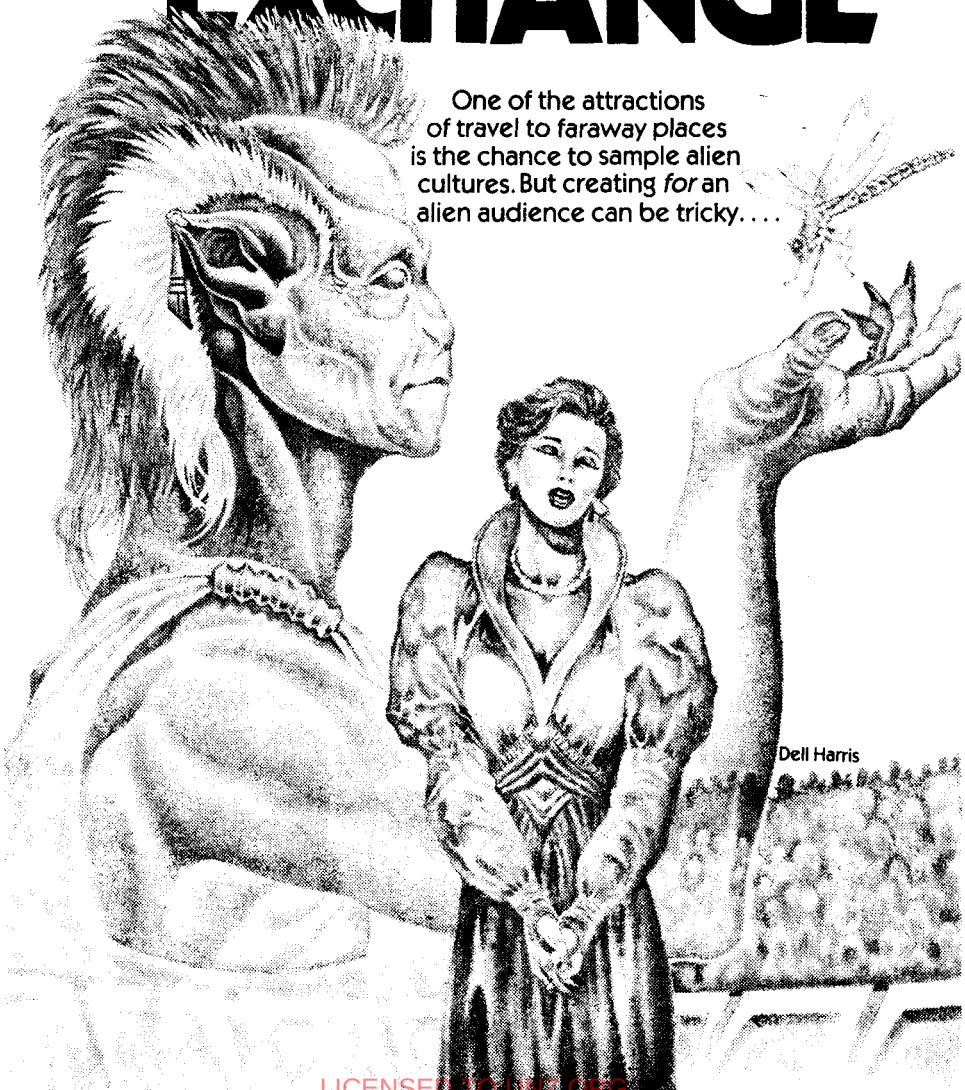
DAH6A

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

L. A. Taylor

CULTURAL EXCHANGE

One of the attractions of travel to faraway places is the chance to sample alien cultures. But creating *for* an alien audience can be tricky. . . .



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"I've been told this is an English-speaking audience," Cora enunciated clearly and slowly. A general motion of agreement encouraged her to go on. "So I'd like to add a little more information about ancient human music to what you see in your program notes. The songs you will hear tonight were written over a two hundred year period beginning some 2300 years ago, Earth time."

She watched the audience. The audience watched her. By far the most humanoid of the many rather odd audiences she had faced, these people not only moved and were shaped much like men and women, but were about the same size. They sat in rising tiers of seats, in a hall that, except for the redness of the light, might almost have stood on Earth. She could already tell that the acoustics were perfect.

"This instrument, which Mr. Merriam will play for the first half of the program, is called a harpsichord," Cora continued, resting a hand on the pale, glowing wood of the case. Her eyes flickered over the tiers of seats. The audience was green. Quite literally: at least a dozen shades Cora estimated would in white light appear like the colors of leaves on Earth, from the darkest yew to the palest lettuce, although in the red light of the auditorium the attentive faces looked more brown than green. The unfamiliar sheets of paper crinkled in their five-fingered hands; their high, faintly feline brows lifted to her as she stood on the stage. They even wore green clothing, soft wide tubes of a light fabric caught at the shoulders with brooches or buttons, which drifted about them as they moved.

Cora finished her explanation of the mechanism of the harpsichord and nodded at Ricco Merriam. The first notes of the Pergolesi tinkled from the strings; she took a breath and began to sing. Within one phrase she knew this would be the performance of her life—wasted, she grieved, on these creatures who knew so little of human history, who could never appreciate tonight's shimmering clarity. A part of her stood apart, enthralled spectator to the exquisite blending of the sonority of strings and vocal cords, the perfect timing of Ricco's hands to her own diaphragm. Never before had they been so . . . in harmony.

Cora had been well briefed. She wasn't surprised when the green people purred instead of clapping at the close of the song, but smiled and bowed —remembering to extend her hands to her sides, palm upward—as if to the loudest applause. Ricco nodded, grinning so she thought his face would burst. At least one of her listeners knew what a miracle was happening! Next on the program was a Bach *alleluia*. Cora stood with her weight on her toes, power running in fiery tingles through her veins as she opened her mouth. Sip this air, sip, she reminded herself. It's richer than most.

She should know. How long had she been like this, at the peak of her ability, thirty-two years old? Cora had no idea. She'd been reconstituted so many times in the subspace drive . . . she might be a hundred, a hundred and ten years old by now. Old enough to sense which atmospheres she'd have to gulp, to carry her to the end of a phrase; which airs she should inhale with caution, to prevent dizziness. Who could tell, she

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

wondered suddenly, what had happened to the Earth she remembered and loved, after all that time?

The flashing thought instantly vanished in her concentration on the music.

At intermission, as usual, she took questions. These people weren't shy, as some were. Hands shot up as soon as she told them that should be their signal for her to take a question.

"We see that you smile all the time, even when the music is sad," the first commented. "Why is this?"

"A matter of tone production," she explained. "I don't know the details of your anatomy, although I see that superficially we resemble one another extremely closely . . . in humans, the roof of the mouth is composed of soft tissue from about here back . . . you, too? In us, when we smile and open our mouths that soft tissue lifts and makes more room for resonance of the sound—" Before her, fifty mouths widened and opened. A few pure, tentative vowel sounds emerged. Delighted, Cora plunged on, describing her method of focusing her voice. They seemed to follow the explanation without difficulty, and the explanation of how the tradition of performance had been supported by recordings made almost contemporaneously with the composition of the songs, the explanation of keys major and minor, and so on, through some quite surprisingly technical questions.

"Of course this isn't our only form of music," she said at last. "It's only a small sample of what a small segment of our world produced over a relatively short time. The Traveling Auditorium has many other examples from many other times and places, songs I can't sing because I am trained only in one method. You can go and listen to them at your leisure, as long as we are here. Shall we go on?"

Ricco demonstrated the difference between the harpsichord and the piano, and sat at the latter, ready for the second half of the program. Mozart, to begin with, and Schubert, of course; a song by Fauré and another by Reynaldo Hahn, and—she was going only to the early twentieth century—one of Alban Berg's early songs. All of the songs in the last half of the program were about nightingales. The back of the program gave a brief description of songbirds, comparing them to some sort of buzzing, bumbling creature that occupied a parallel place in the ecology of this planet. The programs, Cora noticed with a glint of amusement, had been variously folded, pleated, rolled, or carefully preserved, just as the members of a human audience might have done, and now were stealthily unrolled or unfolded, examined quietly as one song or another struck the listener.

The loud purring at the end of Berg's "Der Nachtigal" had begun to slack off when a member of the audience stood and held up both arms. Immediately all sound ceased. "Is it possible that you will sing us another song?" the green man asked. Purrs interspersed with little pleased-sounding yips broke out all over the hall. Cora looked at Ricco, who nodded. An encore! The first ever, since leaving Earth! What should they do? She had planned nothing.

The man who had asked for the encore still stood in the center of the audience. Cora formed the hazy impression that he was of great importance to these

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

people. "I have heard once, long ago, an Earth song," he said. "It is, I think, of the period you have chosen. I would like to hear again this song."

A scramble for music ensued. Cora found herself singing a poem of Rossetti's set by Vaughn Williams. The drowsy summer images seized her; closing her eyes she could almost see the long green grass and the blue thread of the dragonfly suspended, silent, motionless in the sun.

This time she heard the magic pause between the final note and the outburst of purrs that meant she'd stunned them. Out of her own full heart she rewarded them with Schubert's "An Die Musik." Almost in tears at the last few words, Cora barely recovered to bow again —hands out, palms upturned—and be swept off the stage to a deafening purr, her spirit abruptly lower than it had been for years.

The distance to the ship was short and strung with cables. Cora hurried ahead of Ricco. The red sun this planet circled was setting to her left; her bare shoulders felt the air cooling as the light began to fade. She, too, was cooling, what should have been a mood of triumph shading inexplicably into despair as she neared her home.

A green man—*the* green man, perhaps? Each was as individual as a human being, but Cora hadn't quite sorted out the features yet—waited at the private entry to the Traveling Auditorium. A stage door johnny, as the people of the recital's period used to call them, Cora thought with another flare of amusement. She greeted him with her head tilted to the right to show respect, as briefed.

Before he could speak, Andre, the third cultural exchange officer, opened the hatch. "I got it, Cora!" he exclaimed. "What a performance! Absolutely worth the trip!"

She laughed. *Almost worth the trip* was Andre's catch phrase for a good recital; after so many years together the words though seldom spoken still excited her. "Wasn't it!" she agreed.

Andre noticed the green man waiting quietly. "Oh," he said. "Oh, I beg your pardon," and withdrew into the sleek capsule of the ship.

"What does he mean, he has it?" asked the green man.

"He recorded the recital," Cora explained.

"So that your singing can be heard again?"

She nodded.

"I would like to have that recording." The words were quiet, polite, quite definite.

"Oh—but there's special equipment—"

"The equipment can be copied."

"And we're due on, let's see, I think the name is Seadon, in just a week—"

The green man shrugged. "That's enough time. But I didn't come because of that. I came because of your loneliness."

Staring, Cora said, "What do you mean?" We aren't even the same species, she protested silently. He can't want that!

"You, and the man Ricco, and the man Andre. All so lonely," the green man murmured. "And the pilot also, the four persons in the crew, so homesick. When you sang the song I asked

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

for, eight burning centers of loneliness."

"I—I don't—"

"The trigger was the dragonfly, in every case," the green man mused. "I find that difficult to comprehend. You have no affection for the cockroaches that infest the spacecraft."

"No, we certainly don't!" Cora exclaimed.

"But the dragonfly . . . tell me, what does it look like, this 'blue thread loosened from the sky'?"

"Er, it's about so long, and very slender, and has four clear wings at the front that make a blur around it—"

"Enough. I see it." The green man smiled. "Before you leave this planet, your loneliness will be assuaged for ever." His voice purred over the word *assuaged* with a faint pride that struck terror into Cora's heart. "That will be our gift to you." He bowed, palms up, and she saw that she had got the gesture slightly wrong after all. She collected herself sufficiently to return the bow before she climbed through the open hatch of the ship.

Morning. The soft chime of the wake-me-up brought Cora out of a pleasant doze. She rolled onto her side and flicked on the lamp. At the corner of her vision a tiny object rose from the side of her bunk and floated toward the light.

"A dragonfly!" she breathed. Yes. No doubt. One of the little blue ones—

"Andre!" she bellowed. "Ricco! Johan! Come here!"

Ricco arrived first, yawning, his fingers still fumbling at his waist to fasten a modesty cloth. "What?"

"Look!" Cora pointed a dramatic finger.

Johan stumbled into the room as she pointed. "A darning needle?" He rubbed his eyes. "Where did it come from?"

"I don't know."

"It had to come from somewhere."

"Maybe it hitchhiked."

"Cora, we're halfway across the galaxy from Earth. It just can't be."

"It's not," said Andre, who had padded into the room pushing damp hair out of his eyes. "It's too purple, and it's got no head."

"You're right," Cora said. As she watched, a head expanded out of the front end of the blue body, the once familiar triangle bearing two huge eyes. "Do they do that?" she asked uncertainly. "I mean, normally?"

"No," one of the men replied, a slight question in his voice.

"I didn't think so." Cora wrenched her gaze from the unexplained insect and glanced about the room. "There's another!" she said, pointing. "And another!" Five or six of the things, some with heads and others still growing them, hovered and darted about near the ceiling. The hair rose on the back of Cora's neck. "Get out of here, all of you," she said. "I want to get dressed."

She hurried into a jumpsuit, keeping as many of the dragonflies in view as she could. "Aren't there more?" she asked herself, counting. Seventeen, now. "Out," she snapped, swatting at one. It fell to the floor and faded into the carpet.

Outside her closed door she heard Andre exclaim, and then Ricco. Toward the front of the ship, a shout came from Johan. She stepped into the common

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

room at the core of the ship and hurried forward.

"Oh, Cora," one of the crew gasped, passing her at the hatch. "Don't go—"

She stared after the woman for a moment, then dived for the cockpit.

"Grass," Johan gabbled. "Grass, grass, grass. Not even a lawn—"

True. Long, lank meadow grass grew from the floor of the cockpit, leaning into the command chairs, brushing the instrument panels, marked with Johan's footprints where he had run to the control module.

"And what's that stuff?" he shouted, flinching as a carroty green weed sprang up in front of the controls and burst into whitish blossom.

"I'm not sure," Cora said. She licked dry lips, only half aware that her voice was suddenly husky. "But I think it's cow parsley."

"What the hell is cow parsley, and what is it doing on my ship?" Johan demanded, in tones resembling a tea kettle.

"From the song—that song I sang last night, the Ralph Vaughn Williams." She ran through the words mentally and sighed. "I'm glad there's no room for a hedge."

"You had to say that," Johan replied savagely, as leafy twigs burst from the bulkhead behind her.

Cora whirled and banged her elbow into the thickening foliage. "Ow!" she said, examining the three welling pricks in her fair skin. "It's got thorns."

"Wait," Johan said. "Didn't that song have a hedge in it?"

"Hawthorn," Cora agreed, dabbing at the blood with a fold of her jumpsuit. "I'd better get something on this." She stepped through the hatch into the common room she had just left and gasped. The floor was carpeted with bright, succulent-looking yellow flowers. "Kingcups," she croaked.

"Also from the song?" Johan inquired, too sweetly.

"Also from the song."

"I've never seen the things before."

"Nor have I." She had to step up onto the miniature field: beneath the flowers a few centimeters of mucky earth coated the floor. Tiny bees burrowed into the centers of some of the flowers. "But the bees are not in the song," Cora mused. "Definitely not. I wonder where they came from?"

"Now what?" asked one of the crewmen from across the room. "You know it's threatening to rain in our quarters?"

"What are you talking about?" Johan demanded.

"Clouds. Big fat gray clouds." In the man's voice was tight, controlled hysteria. "Bumping around the top of the room—every time you stand up, you've got fog in your face."

Assuaged forever, Cora thought, with a tingle of fear. *I've got to find that man!*

Every set of headphones in the Traveling Auditorium was in use. At the far end of the long room, a pair of children squabbled over who was to have the headphones one of them clutched to its head, while a pale slender adult tried to mediate the dispute. Closer to her, a large green—well, "man" was as good a word as any—with his eyes closed hummed an old Japanese folk song through his nose, while next to him a smaller man mouthed words to whatever

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

he was hearing. An elderly-looking person near the embattled adult with the children lifted the headphones from his ears, and with a sketched bow the parent accepted the offer and clamped the 'phones on the heretofore musicless child, who settled down immediately.

The man who had promised that she would never be lonely wasn't in the room. Or, if he was, Cora didn't recognize him. Anxiously, she searched the faces. No use. She'd never be able to tell whether one of these people had been at the concert the night before—this light was yellow, designed for humans, instead of red, and dimmed in deference to the requirements of this species. To say nothing of her inexperience in looking at these faces!

No one in the room had noticed her. Enthralled, or waiting patiently, or leaving starry-eyed, they spared no attention for anything but the music. The briefing had dwelt upon their preoccupation with sound, but Cora had never anticipated anything like this. She thought of a round, an ancient song, she had learned as a child—

All things shall perish from under the sky.

Music alone shall live, never to die.

With the melody ringing in her head, she admitted to herself that she *was* homesick, that right this minute she wanted above all to set down on some earthlike planet—it didn't have to be Earth, which was a nature preserve now, anyway—and stay. Have a home fastened to the ground. Dig in soil, grow flowers, have friends she didn't see every single day and knew less well than the seven she had traveled with so long. . . .

A bow before her, the elusive wave of the palm-up hands, a head tilted far right. Automatically, Cora nodded and tilted her own head.

"I wish to convey to you my pleasure at your singing," the person said. "And also thank you for the excellent master lesson. I have been practicing since, until I came to listen."

Master lesson? "Oh," Cora said, inadequately. The questions at intermission. Yes. "How is it going?"

"Well, thank you," the green person said. "I hope to hear a great deal more of your Earth music before your ship must go."

"Yes, of course," Cora said, recognizing an excuse to stop talking. "But wait—you were at my recital? Can you tell me, who was the man who requested another song?"

The pointed chin lifted in surprise. "O Nellon, our greatest bard and dream maker. Did you not know?"

"No. No one told me. Do you think—would it be possible to speak to him again?"

"I am sure the songs he heard last night were an inspiration. So he is perhaps at work, in which case no one will find him. But I will look."

"If you do find him, please tell him I would like very much to speak to him again."

"I am sure it will be a pleasure," the green person said, with a sidelong glance at a set of headphones that had just been laid down.

"Do go listen," Cora said warmly. "And thank you."

Cora softly shut the door to the Traveling Auditorium behind her. From the cockpit came the sound of cursing as

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

bunches of weeds and grass sailed through the open hatch into the common room. Cora ducked, first the weeds and then the thought of confronting Johan. In the common room itself a path had been trampled through the kingcups; a smell of bruised green stems filled the air, underlaid with the rotten smell of the muck beneath them. The yellow flowers seemed to fade into the dirt as more sprang up to take their place . . . in the crew's quarters, a light rain fell; one of the women, grim, was covering her bunk with a plastic sheet.

"I could stand it all but the damned bugs," she remarked as Cora looked into the room. A cloud of midges surrounded the reading lamp over the bunk.

"If I wanted to camp out, I'd have joined a conservation patrol!" Cora turned to see that Ricco was shouting at no one in particular, fists raised over his head. "Cora!" he said, catching sight of her. "Do you know the sun is shining on the harpsichord? Andre says it could be ruined! What are we going to do? It's raining aft, and the floor of the common room's turned into a bog, and—" He broke off to swat at a dragonfly.

"I think we may have to put up with it for a while," Cora said. "There's a chance it's just a hallucination."

"Hallucination, my foot," Ricco snapped, stooping to tear up a fistful of cow parsley. He shook the plant, now in vigorous bloom, in Cora's face. Dreamily she noticed the single dark flower in the heart of the umbel. "Does that look like a hallucination to you? Smell it! Feel it! That's a pretty damned good hallucination, if you ask me!"

In her own room, the sun shone. A swarm of dragonflies hovered like a whole tapestry of shredded sky. Cora brushed them aside and asked the computer screen beside her bunk for a score. Something angry, to suit her mood. Or was she sad?

Grinding her teeth, she told the computer to forget it and plunked down on the side of her bunk.

She could follow O Nellon's line of thought. The summery air of the song had made all of them momentarily long for the open fields of Earth; he'd confused that longing with a longing for the items of the song, the dragonflies first, because of the coincidence of their all focusing on that, and then spreading to the other descriptions of the wet meadow in which Rossetti and his lover lay . . . and O Nellon had thought they would enjoy having these things in their ship. Company, of a sort.

Loneliness, he had said. But they weren't lonely. Not more than any other set of people. In fact, the crew, the pilot and the three cultural exchange officers got along unusually well; there was a camaraderie among them that easily survived the occasional disputes or foul moods. People are by nature lonely, Cora thought. Locked in their own bodies . . .

Perhaps O Nellon's people weren't. No, of course not. He'd sensed —read—something—what she and her shipmates felt, most likely he could do the same with his own people, affect their moods with things like dragonflies—

Chilled, Cora realized that O Nellon would not be found. He was busy creating. He was busy creating dragonflies. And more: the smell of bog had invaded her own small cabin; she looked down

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

at her feet to find them buried among the glossy leaves and flowers of the kingcups.

O Nellon was creating. He might well continue his effort until the ship lifted off, bugs, blossoms, bog, and all. What could she do? Andre was probably out recording the native songs, and Ricco was hardly in a rational mood. Cora rubbed at her bare forearms until the goosebumps subsided and went in search of Johan.

Johan was, if possible, less rational than Ricco. Once this was over, if he ever again joked about artistic temperament—! Cora headed aft. Someone had attempted to clear a path through the common room: patches of the floor showed through in a line from one hatch to the other, thinly covered with dirty water; the walls were spattered with mud. The hedge had started to grow out of the bulkhead between the common room and the cockpit on this side, too. The chairs, the vid panels, the food dispensers were covered with a green film such as might form on a damp rock. Some kind of vine grew over the cupboard doors.

She found all four crew members in their quarters, hunched miserably in the misty rain.

"Listen," she said. "I know what's going on."

Four faces lifted with hope.

"I know who can stop it, too. Only I don't know how to find him."

"What gives?" someone asked.

"The guy's name is O Nellon," Cora sighed. "He's their quote greatest bard and dream maker. He homed in on our reaction to that song I sang last night, the one with all this stuff in it, and he decided to give it to us so we'd feel better."

"Hah," said one of the men.

"His heart's in the right place," Cora said.

"Actually, no, their hearts are in their lower abdomens," one of the women said.

"Maybe that's the problem," said the other.

"Listen, will you?" Cora, surprised at how exasperated she felt, perched on the foot of a bunk. "He's doing all this. He probably thinks it's his life's masterwork. But the trouble is, he can't be reached while he's creating."

"The bugs just disappear when you swat them," one of the women said thoughtfully. "Maybe if we just take off? I mean, what's his range on this stuff?"

"I don't know," Cora admitted, "But he told me that our loneliness would be assuaged forever, and I'm inclined to think he knew what he was talking about."

"Forever!"

"Let me tell you, the cockroaches look good compared to this!"

"I'd settle for rats."

"Shut up, all of you, and let me think," Cora said. Ricco appeared at the door as she spoke.

"There you are," he said. "I have a message from a green friend of yours. He says some guy named Melon Head is creating and can't be disturbed."

"I know," Cora sighed.

"Johan says we're getting out of here."

"Oh, no!" Cora's heart banged in her

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

chest. "He can't do that, it won't work! We'll be stuck with this stuff for good!"

"We can shovel it out the airlock once we're gone, Johan says."

"Great," Cora said, hurrying over the unbroken rug of kingcups in the common room. "Can't you see it's self-renewing? We could shovel til doomsday and still have gnats in our eyes!"

Her own words slowed her as she covered her face with her arms and thrust through the thicket into the cockpit. Gnats! Why hadn't she seen it before? Like the bees, there weren't any gnats in the song!

"Johan!"

The pilot paused in tearing Virginia creeper off the command console. Reprieved, the vine shot out a dozen new branches and fastened its suckers over the keys. "Get out of here, Cora," he said. "Now see what you've done. I almost had it loose."

"It won't help," Cora said.

"What won't help?"

"Clearing the vine, shovelling muck, any of it. Not even getting off the planet will help."

"You got a better idea?"

"Yes."

Johan removed a loop of vine that had begun to climb his arm. "Let's hear it," he sighed.

"I'm giving a second recital," Cora said. "Tonight, if possible, or tomorrow afternoon if we have to go that long."

"That's going to get rid of this stuff?"

"With any luck. How fast can we get programs out?"

"Half an hour after you decide what you're singing, we'll have them," Johan said.

"Good. Then say, in an hour and a half. That brings us to early afternoon—and I think publicity won't be a problem." She grimaced. "At least, I hope not. My plan depends on it. Meanwhile, I need a readout on the headphone requests, and then why don't you get out of the cockpit?"

"And let this stuff take over completely?"

"It will anyway," Cora pointed out. "And I've got a feeling staying here will only encourage it."

The crowd was larger than the night before. Standees lined the walls of the auditorium; every aisle was crowded with squatters. Cora looked out over the array of faces and doused an urge to yell *fire*. Only frustration, that her concentration on O Nellon had failed to bring him out of the bushes, she told herself. She didn't really wish these people ill.

"Tonight's recital will draw from a different period of human music," she said. "A tabulation of the tapes most often heard in the Traveling Auditorium showed that the music of this period was most enjoyed by your people. I have chosen some songs that do not appear on the tapes, as I told those who came to the Traveling Auditorium earlier this afternoon."

The face she wanted was not in the audience, Cora concluded. Smiling, she concealed her disappointment and nodded at Ricco to begin the accompaniment, on the color organ, for the first song: a bravura piece by Okawa, arguably the most popular composer of the *bel canto* revival of the early twenty-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ninth century. She only hoped she could sustain the endless phrases. . . .

And found she could. Again, she was singing better than she had in her life; her anxiety lifted and she became the music she was trilling. The purrs at the end of the performance were deafening. Cora bowed, her hand gesture perfect today.

She had chosen the program with great care, arguing each selection with Ricco, checking back with Andre, talking to each crew member and with Johan. With luck, it would convey what she hoped to convey: that while the people of Earth might sometimes long for home, their spaceships were also part of that home and had been built to suit them. That marsh marigolds and Queen Anne's lace belonged in fields under blue skies or in the thoughts of men, and not on the floors inside their ships. That moments of homesickness were normal, even expected; that their isolation one from the other was seldom a source of pain.

Fortunately, the *bel canto* revival had dealt at least obliquely with all of these ideas, and Cora was equipped to sing its thoughts.

Purrs, and the pleased little yips. Cora bowed. Where was O Nellon?

Four exhausting songs later, she declared intermission. The questions came thick and fast, inquiries about interpretation mixed with technical concerns, and yes, as she had hoped, some of the green people asked about the meaning of what she had sung. Perhaps O Nellon didn't need to be here. Perhaps he would read from his own people, the way he had read from her own mind and her friends' minds, however imperfectly. Because that had to be it, didn't it? He had constructed these things somehow out of their minds. That was the only possible explanation for the bees, the gnats, the leaping ivy.

She sang the first song after the interval with her eyes closed, marvelling at her own ability. Or was it her ability? Was it instead some effect of the planet . . . she pushed the thought away, afraid of it.

Once again, the purrs, the yips, even a few low whistles. Gleaned from the records of live performances, no doubt. Cora bowed, and as she straightened, saw a disturbance at the back of the audience. O Nellon had arrived. She bowed again.

The audience stood. A voice in the native language sang out, in the cadence of their questions. O Nellon came slowly toward the stage, the crowd parting as he moved among them. He mounted the few steps that separated the stage from the audience, and bowed. Heads in the audience tilted like the wave of a breeze through a field; here and there, someone purred softly. Cora stood aside, her hands pressed tightly together just under her breasts, her breath suspended.

"Yes, I have created," O Nellon said into sudden silence. "I speak of it in this English language, so that everyone may understand."

Cora, with all the eyes directed at her, suddenly felt something akin to stage fright.

"I have created the world of the song I requested last night," O Nellon continued. "I have wanted to do so for many years, because of the sound of this song, but I had no model for the many

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

objects mentioned. Now, with the Earth people on the planet, I have the models.

"However, I have been in serious error. I thought the humans would accept, in tribute, the recreation of that world in such a manner that they could take it with them wherever they wished. It seems now that they would prefer to carry it only in memory."

A muttering arose in the audience.

"I will therefore destroy this new creation as rapidly as I can," O Nellon said.

The muttering increased, and the glances from the audience now seemed hostile. Cora's knees began to tremble. To reject a gift from their greatest—an insult of the first magnitude—yes, interplanetary repercussions—and she a cultural exchange officer—"Wait," she said.

O Nellon turned toward her, and the noise from the audience subsided.

"Could you move it?" Cora asked, surprising even herself. "Could you create a small bubble of this world somewhere on this planet, where your people could see it at will and where my people could refresh themselves whenever they came here?" She took care to keep her head tilted toward the right as she made this suggestion. Her hands were still clasped, sweating, the fingers cramped. In a small voice she said, "Would that be—acceptable?"

The silence dragged on. Cora felt as if she might break, might shatter into slivers leaving only her stiff dress behind.

"A garden?" asked O Nellon.

"Yes," Cora said, recognizing the idea. "Yes, that's it. A garden." What was it those other peaceful creatures had called it, the lizardy ones? "A friendship garden."

Somewhere in the middle of the hall a low purring began. Others took it up, and the sound spread to the edges of the room. O Nellon held up his hands. The sound stopped.

"Yes. Yes, I will do this thing. It will be my masterwork, as I intended the other."

"We'll help," Cora said impulsively. "We'll give you the details, think about them so you don't have to search so hard."

O Nellon tilted his head to the right. "Excellent," he said. "You are a clever woman as well as a great singer—clever to tempt me out of my creative isolation with the excitement of my friends at a second recital, clever to think of this compromise that will salvage my work."

Cora bowed. She could think of nothing else to do, but apparently this was all right: the purring resumed.

The process was not instantaneous. First the kingcups slowly disappeared, taking their muck with them. The crew gathered again in the common room, glad to have one place nearly normal even if the insects still buzzed around the lamps. A short while later the sun and the rain turned off. In the morning, Johan entered the cockpit, and reported only a few tufts of grass still growing around the command chair. Last, the dragonflies faded away. Late that afternoon a single white butterfly with dim brown spots on its wings appeared in midair in the common room, fluttered down to perch on the back of a chair, and flickered out. "That was mine,"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

said one of the crew, with an air of satisfaction.

The last day of their stay arrived before the eight Earth people could walk in the field and feel the freeze. A yellow sun hung in a blue sky, where hazy clouds scattered and amassed. There was the hedge, with tiny red fruits hanging from its twigs, and the patch of long grass that bordered the squashy meadow. Cow parsley bloomed beneath the hedge, and dragonflies—not just the blue ones, but the big black ones with the clear wings patched in brown, too—hovered over the flowers.

"Beautiful," Cora breathed. "A masterpiece indeed."

O Nellon bowed. "And you find it refreshing?"

"Oh, *yes!*"

"I have given much thought to this loneliness of yours. I think I have found another way to assuage it, although perhaps not forever."

Cora glanced at him with horror. The green poet smiled, caressing the small light-powered recorder Andre had supplied with the two spools of the concerts. "Do not fear!" he said. "I won't make the same error twice."

"We don't want to read each others' minds, you know," Cora said apprehensively.

"I know that, clever one," O Nellon assured her. "No, I think I have the proper solution this time."

Green singing crowds gave them a sendoff not easily matched, and by the time the ship lifted off, Cora had more or less forgotten the conversation with O Nellon. Orbit had been achieved, and Johan was plotting their course for the next stop, when she rose from her acceleration couch. At her first motion, her toe struck something soft. She looked down. A small red felt object floated gently upward. She caught the thing out of the air as the pseudograv came on, wondering. Ears and a tail marked it as a toy mouse. Its minty-rough smell sparked memories.

"Catnip," Cora whispered. She rushed to her cabin and flung the door wide. Curled at the foot of her bunk, a half-grown calico cat lifted its head, yawned, and began to purr.

"O Nellon," Cora groaned, in the general direction of the planet she had just left. "I am *allergic* to cats!" ■

For there are some persons who believe there are many worlds, and some who even fancy that they are boundless in extent, being themselves inexperienced and ignorant of the truth of those things of which it is desirable to have a correct knowledge.

Philo Judaeus (c. 25 B.C.–c. A.D. 45)

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The Alternate View

WHAT IS A SCIENTIST?

G. Harry Stine

A "scientist" is presumed to be a person who is free of ideological bias. In other words, a scientist is supposed to deal with facts and the great truths of the Universe—i.e., answers to the eternal question, "Why?" The American public thinks that a scientist is a dispassionate, rational, logical person who solves equations, searches for new scientific truths, and seeks to indeed deal with "The facts, m'am; just the facts," to quote Sergeant Friday of *Dragnet*, for those of you who remember such things.

Would that it were so. If you believe that most scientists are free of ideological biases, I have an acquaintance who would like to make you a very attractive offer on the purchase of a bridge . . .

There appear to be two different types of biases that afflict most scientists: (a) scientific bias, and (b) political bias.

It is often difficult to separate one from the other or to discover which bias happens to be affecting a given scientist.

One type of bias appears to be part of the game of being a scientist. The other seems to be somehow connected with an attempt to parley one's scientific credentials and position into a position of political power—i.e., the scientist suddenly becomes far more interested in power over people than power over the universe.

The first type of bias—scientific bias—is by far the most common and is also the one least likely to see the light of public discussion. The controversies usually rage in the faculty lounge or in the pages of one of the billyuns and billyuns of scientific journals read by no one other than those involved in that particular sub-field of that field of that area of that part of that scientific discipline. I remarked above that it is presumed that a scientist deals in facts. This is true. But bias enters the picture when one realizes that a scientist must interpret the data to infer the facts in order to arrive at a hypothesis or to confirm a theory. Believe it or not, facts are usually tempered quite highly with bias.

A well-recognized doctrine of scientific inquiry is also one that is rarely discussed but generally observed with religious intensity: *"Dogma determines the data which may be observed and reported."*

That statement will kick off a storm of letters. But, before you deign to pick an argument with me, you'd better be very certain of your scientific history, a little known field of human endeavor which also happens to be rife with bias and anecdotes masquerading as facts.

How many times have you been forced by the prof, the thesis advisor, or the Director of Research to re-run the test or re-do the experiment because some or all of the data doesn't fit the curve, stubbornly refuses to succumb to a least-squares fit, isn't "well behaved," or keeps on repeating itself every time the experiment is run that particular way? Usually, the equipment

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

gets blamed. Then the instrumentation. Did you calibrate everything properly? How recently were the instruments standardized?

How often have you been successful in getting someone to realize that the datum which repeatedly falls off the curve might be meaningful and lead to some new insight into the whichness of what?

Not very often, I'll bet, especially if the consequences might, just might, threaten to demolish the life's work and therefore the reputation, position, and/or tenure of someone up the line. So wait twenty years or until the top dog retires; then try again. There appears to be a twenty-year cycle between the actual discovery of a controversial new idea and its general acceptance by the scientific community. (And another twenty years before it becomes the basis for a successful technological product.)

There are exceptions, of course, and they make news. Those who have been most successful at convincing others of the reality of the wild datum usually (but not always) end up getting a medal and an honorarium originally established by a Swedish high-explosives chemist . . . plus temporary immortality. (Anybody want to take bets on whether or not all the Nobel laureates will be remembered in 2986? John W. Draper wasn't a Nobel laureate because his pioneering work was done in 1840 before Nobel invented dynamite and got an attack of the guilts. But, only 145 years later, how many people remember him and what his discovery did for astronomy?)

Data points are falling off the curve in even greater abundance today, especially in nuclear physics. Dogma allows you to invent a new particle to account for the anomaly. If you cannot come up with a new particle or some new aspect of a particle to explain the wild datum, that datum must be rejected. No one is permitted to re-examine the basic dogma. The only thing to do is wait twenty years and have a very good memory, a witness, and a legible copy of a very complete lab notebook.

The second type of bias is political and/or ideological bias. This is becoming far more common and is *always* carried out in the public forums. We see the director of the Soviet Institute of Atomic Energy where high-power lasers are being developed authoring a letter signed by 200 Soviet scientists protesting the American Strategic Defense Initiative . . . without, of course, mentioning his own role in the development of laser technology or the Soviet militarization of space which started in August 1957. Since *nothing* is published in the Soviet Union for open foreign consumption without careful ideological review by the special department for disinformation of the First Chief Directorate of the *Komitet Gosudarstvennoi Bezopastnosti* located right across the courtyard from Lubyanka prison at 2 Dzerzhinsky Square, Moskva, one expects this sort of ideological bias to be an integral part of anything that emanates from that part of the world. However, it is less understandable, especially to the American public, to see outstanding American planetary astronomers making unqualified and unsupported statements involving military doctrine, nuclear effects, computer program-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ming, and basic engineering, subjects about which they know nothing. The American public sees little difference between the Soviet and the American scientist, viewing them both as examples of the pure scientist who was defined at the beginning of this column as one dispassionately without ideological bias.

American audiences will show up if the Soviet scientist speaks in the United States; we do indeed have open forums of discussion here. These do have a tendency to get a bit loud at times, even at a simple town council meeting if a controversial agenda item comes up and someone's ox happens to get gored. But they are generally carried on with an attempt to maintain an honest sense of decorum . . . although *Robert's Rules of Order* are often bent just a tad in the process. But rather than allow a Soviet physicist to lecture here, knowing why he got here in the first place and that he is permitted to visit the United States by the Party primarily to speak approved Party *pravdas*. I think it would be far more enlightening to invite the Soviet physicist to debate someone like Dr. Lowell Wood with Dr. Jerry Pournelle standing in reserve in case Dr. Wood's voice gave out (unlikely, but possible, depending upon the circumstances of the debate). Putting Dr. Carl E. Sagan on the American debating team would be like pitching a slow, hanging straight ball to Pete Rose. On the other hand, American physicists permitted by the Soviet government under "cultural exchange agreements" to lecture on the same subject even in Moskva would draw only a small audience almost entirely composed of stalwart KGB employees because "lecture tickets were hard to obtain" otherwise . . . and who knows what one might learn through a slip of the tongue, eh, Comrade? As for a debate . . . Have you ever competed in an international sporting event in a Warsaw Pact country where national prestige is far more important than our British-born sense of fairness, fair play, and sportsmanship? Reminds one of the fictional auto race around Moskva between the Chevy Corvette and the Soviet Lada. The Corvette won, of course. But it was reported the next day in *Pravda* that the Soviet car came in second and the American car came in next to last. . . .

In short, since it has become patently impossible to keep the ideology out of certain scientific and technical subjects these days, perhaps the best thing to do is to call a spade a shovel and make it quite obvious that ideological matters are indeed personal factors in a given scientist's position. I would tend to cheer for one team; other people would cheer for the other team. It's a hell of a lot better than going to war over the dispute, especially since our culture has determined that general war *a la* 1939-1945 doesn't "pay" any longer . . . unless the clowns really come at us fangs-out, in which case we'd better start playing Bernard Goetz and blow their shorts off. Be nicer to have a pair of bullet-proof shorts as well. Better yet, if both sides did. Then the ideological fight could go on differently. And we might get some better answers. ■

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

W.R. Thompson

HOOKED ON CLIPS

We've all heard that phrase, "There's a perfectly logical explanation. . . ."

Arthur George

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Dear Stan:

I first became aware of the paper clip problem earlier this year, when I read Ms. Fosdick's letter in *Awesome Stories*. You probably saw it. She covered two pages with her complaint that you and the other editors at Davis Publications devoted your energies to swiping the paper clips from the stories she sent you. The letter was filled with speculation concerning just what everyone at 380 Lexington Avenue does with all of the paper clips that vanish into the Davis offices.

I didn't think much of the matter—then. Sure, I'd noticed that whenever you fiendishly reject one of my stories (an activity which will astound future generations) you never return my paper clips. Mind you, this isn't a complaint. In a way, I think of the lost paper clips as a sacrifice to the gods of Editing, which is why I always use the *very best* paper clips. If you're hooked on clips, I reason, why not indulge you?

There's only one thing wrong with not getting the paper clip back on a rejected manuscript. One time after you mailed a story back to me, I took the envelope into my bedroom, opened it—and all of those loose pages slipped out. The perversity of the universe being what it is, the sheets went flying all over the place: out the window, behind my desk, and under my bed. I never did find all of the pages, mainly because I didn't want to grope around in that icky, dusty mess under my bed. If there was a rejection slip in there, I had lost it for good—and good riddance, I thought at the time.

I didn't think about paper clips again until last week, when I was ready to ~~[illegible]~~ mail another story to you. I reached for a paper clip, whereupon I found that my box of Acco's #2 Ideal Clamps was empty. This puzzled me for a moment, because I knew that I had bought the packet just a few days earlier. However, I swiftly found myself thinking that it was a *stupid* thing to worry about—who wants to waste any time or energy fretting over chintzy, insignificant scraps of twisted *wire?* Any idiot could dash out to the nearest store and buy more paper clips, which is what I did. I bought a whole *carton* of Gem clips, and a handful of Junior Clasps to boot. I have never felt so satisfied in my life as I did when I placed the new clips on my desk.

After I had mailed off that last story, I sat down at the typewriter and set to work on another yarn. I was interrupted by my cat, who had begun wailing and clawing at something under my bed. At first I figured that he had just found one of his missing catnip toys. To my amazement, however, he pulled that long-lost rejection slip out into the open and began sniffing it.

I couldn't imagine what had happened to that slip. It looked *burst*, like an empty seed shell, and it had a faint organic odor. While I puzzled over it, the cat spun around, arched his back, and began hissing.

I can't blame him. One of those brand-new boxes of paperclips slid off my desk, fell to the floor, and popped open. So help me, one of the clips drifted up into the air—and as I watched, the beast that held it in a tentacle slowly became visible, like a TV screen coming on.

The creature looked like a mass of seaweed, more or less, but when was the last time anyone saw a pile of seaweed with tentacles, purple eyestalks,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

and a slobbering, fang-packed mouth? It smelled exactly like the rejection slip, and it made a thick, gasping *blorch . . . blorch . . . blorch* as its tentacles crammed paper clips down its gullet. It must have been thriving on its diet of paper clips, because it stood well over two meters tall. It was clearly old enough to reproduce, because hundreds of immature rejection slips dangled from its psuedopods. Those disguised seeds shook like leaves in the wind each time the blorch monster smacked its three leathery lips.

Several of the eyestalks focused on me, and I felt like a fool. I'd been working too hard lately, and now I was seeing things. No, I was *imagining* that I had been seeing things, because the hallucination had faded away. Frankly, I was humiliated to know that I could imagine a creature that could exist on *paper clips,* of all the idiotic things, and I was determined to forget the whole bad trip. To add to my annoyance, my cat was still snarling and hissing at absolutely nothing. I picked him up and carried him out of the room.

The blorch monster relaxed its telepathic grip on my mind as soon as the door closed behind me. I fell to the floor and shook. That thing had been in my *mind,* controlling my thoughts, forcing me to bring it food and preventing me from noticing its existence—and trying to brainwash me when I finally did see it.

I slowly got a grip on myself, and I forced myself to face the situation with what logic I could muster. It was obvious that, despite its hypnotic power, the blorch monster was not too bright. If it had any intelligence at all, it would never have let me observe it while it was feeding, and it wouldn't have released my mind as soon as I was out of its sight. This implies that blorches have evolved to fill a very limited and sharply defined ecological niche—and, Stan, an important part of that niche is obviously your office.

Think about it! You get at least a hundred manuscripts a week, true? That means you get at least a hundred paper clips every week, of every conceivable brand. How many *humans* get a diet that rich and varied? You know what happens whenever you read a manuscript, Stan. The first thing you do is remove the paper clip and casually put it aside—and if you can't find it later, well, what the hell, you've got other things on your mind besides lousy *paper clips*. With a blorch monster sitting next to you, I *guarantee* you're not going to think about lost paper clips.

And what about the stories you reject? Each one of them leaves your desk with a rejection slip—or should I say, with a blorch-seed that *mimics* a rejection slip? Mimicry is one of the most common defenses in nature. Other forms of life spread their seeds and spores on the wind, or stuck to the fur of animals, or *via* the digestive tracts of birds, so why shouldn't *something* adapt itself to take advantage of a worldwide postal system? The U.S. Post Office is almost as fast and reliable as the ocean currents that transported coconuts from atoll to atoll in the Pacific; and look at how well coconuts have done.

As you can imagine, most blorch-seeds are wasted, ending up in fireplaces, wastepaper baskets, or desk drawers. In nature that's the fate of most seeds. Only a very few will end up in fertile ground, such as the space under my bed—and of those few, only a tiny percentage will have access to a nutri-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

tious, yummy supply of paper clips. Just the same, that must be enough to ensure the survival of the species.

Are blorches dangerous? I'm certain of that. They can't have any natural enemies; how can any predator prey on a creature which can make itself psychically indetectable? Blorches could multiply as rapidly and disastrously as rabbits had in Australia. When they outstrip the paper clip crop—well, you didn't see those fangs. A starving blorch might not be too fussy about what it ate.

Besides, the damned thing had been tampering with my *mind*, Stan. I'm convinced that it had compelled me to write some *bad* stories, which would give you no alternative but to disseminate even more rejection slips—and as far as I'm concerned, rejection slips are a menace to the American way of life.

I saw my duty. I opened up the hall closet and got out the rifle that I have for home defense. I still carried some Junior Clasps in my pocket, and when I opened the bedroom door I tossed them onto the carpet as bait. The blorch monster's control slipped as it began feeding, and as soon as it became visible I took aim and defended the living bejeezus out of it. Forget about those old B-grade monster movies, where the revitalized dinosaurs laugh at the National Guard and the giant wombats shrug off nuclear attacks. A few well-placed bullets will do the job every time, if you hit the blorch square in the belly.

I don't know how many blorches are running amok in the world, and I don't know how we can exterminate them. The one in my bedroom was young and inexperienced, which must account for the ease with which I killed it. The one living in your office must be a wily old monster by now. I don't know how long blorches live, but I'll wager it's been around since the days of John Campbell. It won't drop its guard so carelessly, and even as you read this it must be filling your mind with the thought that this is the dumbest, silliest thing you've ever read. Even though this is only a *letter*, you can feel an overwhelming urge to send it back to me with *several* rejection slips—but you can rise above that.

You're a scientist, Stan. It's up to you to find a foolproof way of destroying every last blorch monster. Try feeding them paper clips dipped in Agent Orange. Maybe you can shape a clamp out of plutonium or plastic explosive. Failing that, try wrapping a paper clip chain around a hand grenade. Carry on the battle—but don't tell *anyone* about it! You see, the blorches have a defense which I didn't discover until it was too late.

One of the local newspapers heard about my experience. They ran a four-column picture of me, rifle in hand, grinning like an idiot, one foot planted atop the dead blorch. You'll see that picture eventually, because it's going to be Exhibit B at my trial—the dead, preserved blorch monster will be Exhibit A. I don't know why I didn't foresee this, but with their instinct for survival and their telepathic hypnosis power, it must have been child's play for the blorches to put themselves on the endangered species list.

Regards,
Bill Thompson ■

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

on gaming

Matthew J. Costello

There are people who will never play a role-playing game. Let's face it. People scrambling home after a day in the corporate battlefields are just not likely to sit down over a bowl of peanuts and "role-play" Gandar, the dwarf wizard.

And 'tis a pity. Folks who have become jaded with the one-upmanship of *Trivial Pursuit* and the titillating indiscretions of *Scruples* might enjoy a fantastic adventure filled with hidden treasure, evil monsters, and damsels in distress.

Enter the computer. *Ultima III* (Origin Systems Inc.) is an exciting role-playing adventure game which captures much of the flavor and thrills of a fantasy quest. It can be played alone, or up to four people can form a party and explore the land of Sosaria. An award winning game, *Ultima III* is one of the best computer games that I've ever played.

The game is a sequel to the very popular *Ultima I & II*. At this point in the saga, the mighty wizard Mondain and his evil consort Minax have been slain by your characters. The happy peasants of Sosaria sing your praises, deliriously happy to be freed from the dark evil that hung over the land.

But Sosaria is faced with new dangers. Ancient manuscripts speak of a great conflict to come, when the Great Earth Snake will rise from watery depths. Once again great evil will haunt the land.

Oh goody! Because that means that your party must venture forth and defeat it. (You wouldn't shrink from the task, now would you?) Adventure awaits, and you'd best cancel your social engagements for the next couple of weeks. *Ultima III* is about to devour your precious leisure hours.

The program begins with a small animated scene depicting a dragon overwhelming someone else's unfortunate party. You then load a previouly prepared "scenario" disk. With this disk you make all the important decisions about your characters. You select a name, sex, race (Human, Elf, Dwarf, etc.), type (fighter, wizard, thief, etc.) Then you have 50 points to allot to four attributes—Strength, Dexterity, Intelligence, and Wisdom. No attribute may be less than 5 or more than 25.

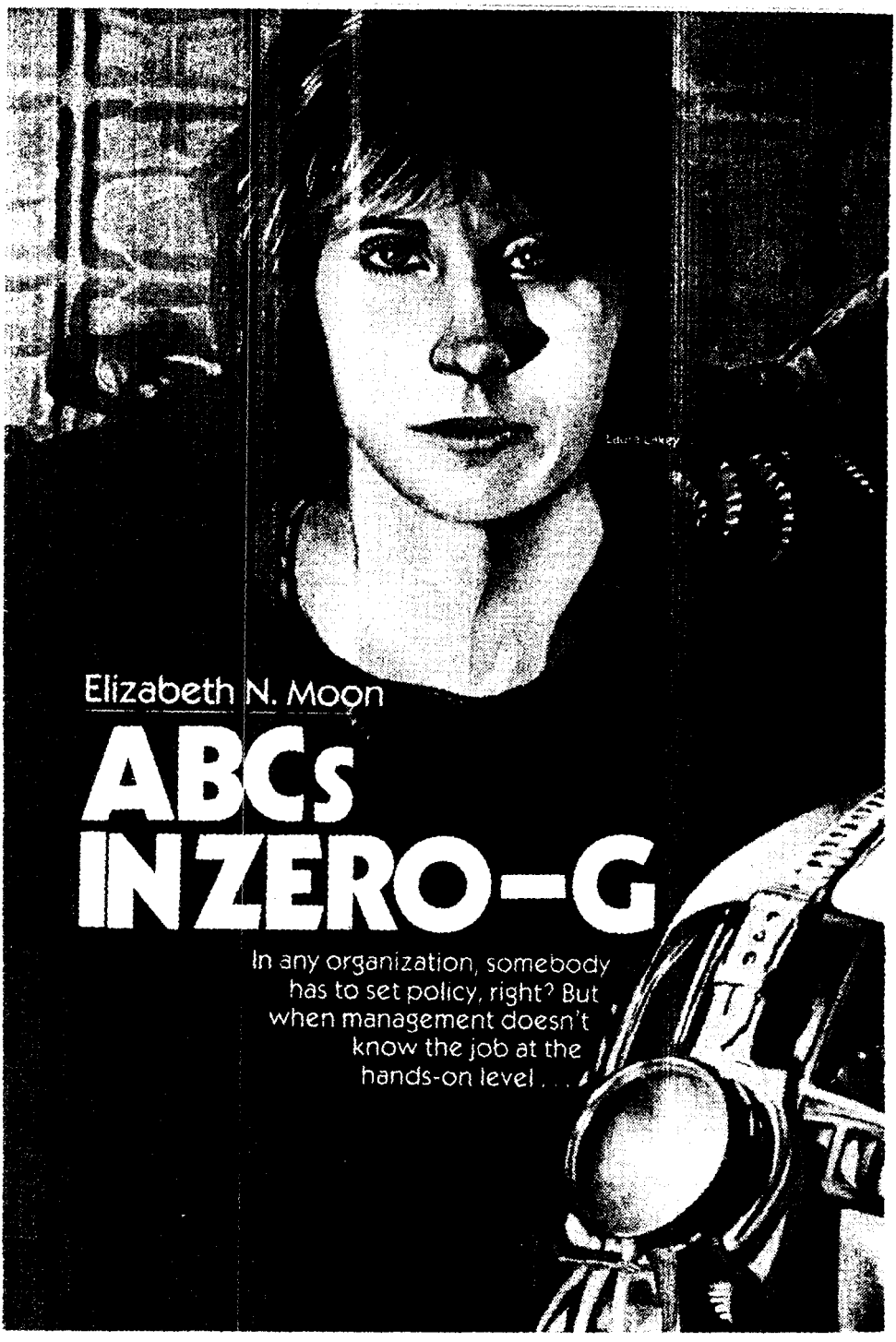
When the party is finally formed, you're ready to "Journey Onward" to Sosaria.

But wait. Since it's more than likely that your inexperienced group will enter Valhalla pretty quickly, it's advisable to copy the scenario disk. That way, you can restart the adventure without creating brand new characters. In this game, when a character is dead, a character is dead. The program stops completely when all are killed, and it's a pretty unnerving event.

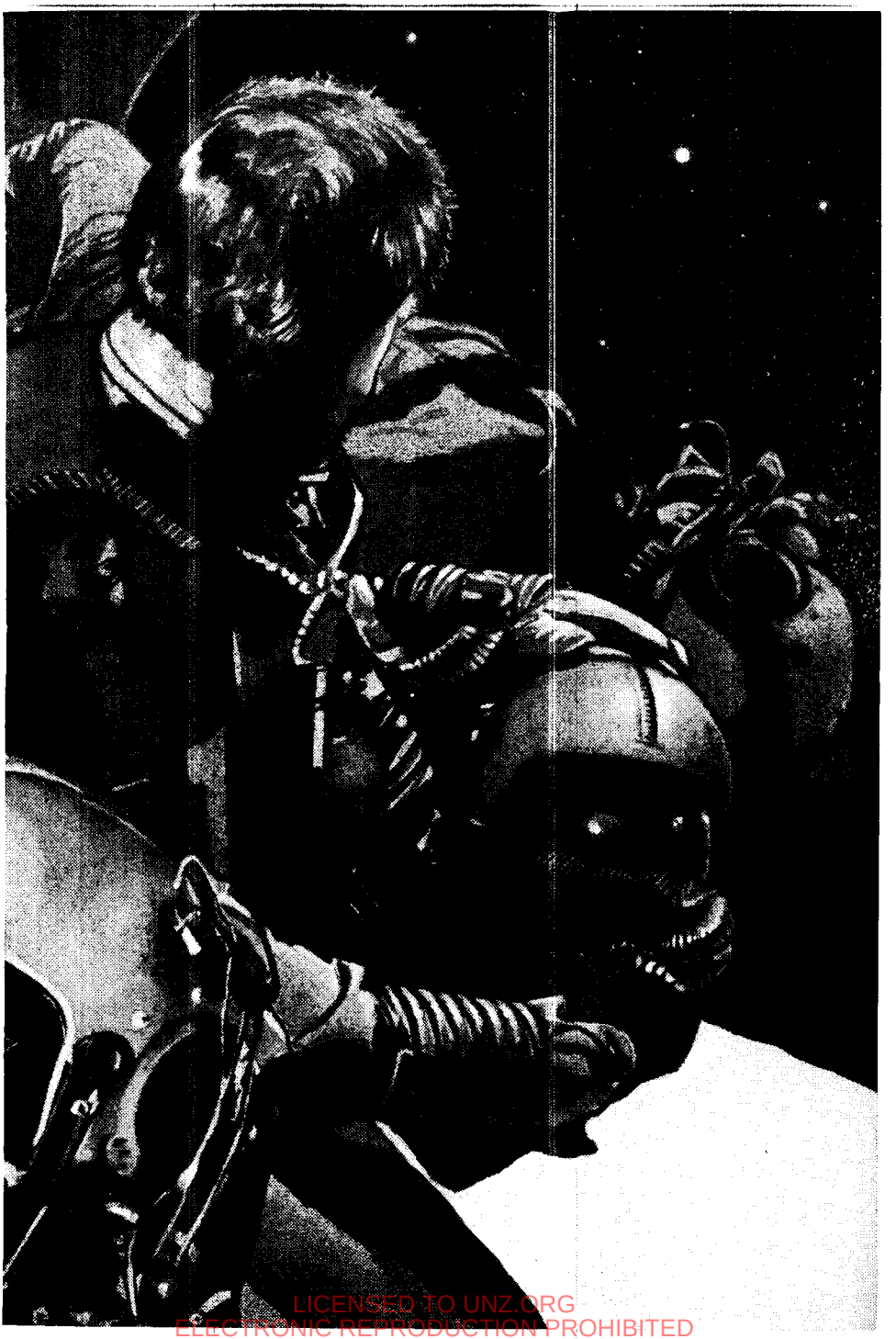
When ready, you move your party (represented by a knight) on a scrolling

(continued on page 183)

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED


Elizabeth N. Moon
ABCs IN ZERO-G
In any organization, somebody has to set policy, right? But when management doesn't know the job at the hands-on level . . .

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

When the alarm rang, I rolled off my bunk. Only I didn't. I rolled into the Velcro-fastened safety webbing that reminded me, as my stomach did, that my bunk was in Sector Yellow, Station One, rather than Colorado. I fought my way out of the webbing and managed to fumble across the wedgi to the airlock where our unit was docked. Fairley was at the station console.

". . . Code Three at Sector Blue. Clear at 1325." He flipped up the microphone wand and turned to me. "Get any sleep?"

"Enough." I hadn't, though. I wrenched at the airlock controls. Fairley was rummaging in the lockers for our gear. He followed me into the lock, and we helped each other into EVA gear while the lock checked to be sure that our unit hadn't vacuumed on us. Then we crawled into the modified cargo raft that was the Station equivalent of the Advanced Life Support module housed in your local fire station. Flashing lights and all.

It's not quite the same, of course. Instead of an oblong box with a bench on one side and a gurney on the other, its cross-section is pentagonal. The front compartment closes off with a narrow airlock, and two locks service the back: one large enough to take a full-size construction worker, in space suit, with a medic at his side. The whole inside is lined in Velcro instead of shiny vinyl, so that our working shoes will hold in zero and low gravity. Because EVA suits have powerpacks built into the back, the gurney is in two pieces.

The Zero itself carries only the equipment needed for EVA work; every sector and ring stores trauma and emergency gear inside as well. So we have no backboard (unless with someone in a space suit), and the few splints we need are racked on the overhead. But the paramedic on your local unit would catch on quickly; it's not that different. Our protocols are much the same, too. ABCs first: airway, breathing, circulation . . . simple. Only up here, nothing is quite that simple, even ABC.

It was Fairley's turn to "pilot," and I watched as he flipped the radio wand and spoke.

"Sector Yellow Zero, Station Central."

"Go ahead, Yellow Zero."

"Route to Code Three, Sector Blue."

"Link computer band 47."

"Linked 47."

"Disconnect when ready."

"Disconnect." Fairley's sole contribution, if all went well, was this single button push; we'd been told that only the Traffic Computer could manage traffic within the work radius. The computer picked our route, and controlled the thrust of our engines. We were pushed first one way, then the other by the computer's "priority route" thrust changes. Zeros, like ambulances on Earth, are fuel wasters.

"Wonder where Blue Zero is?" I asked, as we started off.

"They had a possible coronary in the cafeteria. The guy was hooked up to the monitor already." Fairley sighed. I felt the same way. Inside the Station, we had a chance to do our job. Outside . . .

"Station Central to Yellow Zero."

"Go ahead, Central."

"Stand by for graplons." That last shove must have been relative deceleration; now the working crews near the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

accident site would shoot magnetic-tipped lines to snare us where we were needed.

"We're ready." I struggled out of my couch and back to the working compartment. Code Three was a major injury involving the trunk; we'd had five since they started using the Zeros. All had died. None of us was happy about that.

I had already locked my helmet on, and checked my suit radio; now I cycled out through the medic-lock, careful to clip my safety line to the rings. Outside made no visual sense at all. I'd learned to ignore it on a run; it took too long to become oriented. We had plenty of time off-duty for sightseeing. From a side rack I pulled a jointed aluminum frame, descended from the old scoop stretcher. With it, we could transport a victim in whatever posture he was found. Nothing else could be done until we had the victim in the Zero. That was one of our problems.

"Pat, they're coming in on red graplon." That was Fairley, back in the Zero setting up equipment. Red graplon was, by convention, the starboard one. I pussyfooted carefully around the Zero's belly, trailing the stretcher. I saw them almost at once; two suited figures towing a third along the graplon.

"Shift super Varrib to Zero medic."

"Medic here," I replied. "What's the problem?" I began to move slowly along the graplon, trailing my safety line. I was pleased to see that they slowed down. Early on, we'd lost one patient entirely when the construction crews moved too fast and launched him across the whole ring.

"Crush injury; his powerpack's damaged too. Vitals look bad."

"What hit him?"

"The second supply packet on our shift. We think it was the conduit."

By then we were only a few feet apart. I could see the damaged section of the powerpack; the cooling fins on one side were twisted almost off. I adjusted the aluminum frame stretcher to the victim's suited shape, and looked at the vital signs readout on his helmet. Vitals were bad indeed: fast pulse at 130, blood pressure well below normal at 90 over 40, and his arterial oxygen, or pO_2, was only 76.

"Try to get him back in time," said the second worker, whose helmet was marked Deans.

"We'll do our best," I said, a bit crisper than I meant because our best hadn't been so good lately. I was already moving the victim toward our Zero.

"Want any help?"

"No thanks. It's hard to compensate for the extra movement."

"OK. See you later."

Fairley helped me cycle the victim through the patient airlock. By the time we hauled him into the compartment, we had his helmet off. I had flicked on the recorder, and now started my report as we worked.

"Respirations spontaneous, but rapid and labored; the face appears slightly cyanotic. The patient is unresponsive."

"This stupid suit!" Fairley snarled. "It's worse than football pads. And these so-called joints—!"

I was too busy to help him. The VS monitor showed a pulse now at 145, BP 80 over 40, and pO_2 70; downhill in all

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

directions. "We need to assist respirations; I think he's got a pneumothorax. He sure isn't getting enough oxygen, even with the prongs. Can't you get his head back at all?" We knew from bitter experience that intubation worked much better than mask-assisted respiration —nobody could keep a mask in place with unpredictable accelerations.

"No. The powerpack must've bent the neck coupling. It won't go."

I picked up the Garfield tube set. "I'll have to try it this way, then."

"Go ahead. I'm not getting anywhere here."

The man's mouth gaped slightly. I shoved in a bite block and used the sponge forceps to pull his tongue forward and to the side. On the clear side I slid in the guide channel of the Garfield, a curved green plastic device that fit into his mouth and made intubations possible even when you couldn't position the head properly. The old way, you had to have direct vision of the trachea with a laryngoscope, but not any more. The Garfield had channels to guide a remote visual and the necessary tubes into the right place.

I clipped the magnifier eyepiece to my headset and threaded the fiberoptic scope into its groove. Beneath it I threaded the two tubes—one for the trachea, one for the esophagus—into their respective channels. I needed five hands: one for the suction tip, one for the forceps controlling the tongue, one for the lightsource fiberscope, and one each for the tubes. Fairley gave up his attack on the suit and took over suction and forceps. That left me only one hand short—not bad at all. But I had to hurry. Not only the man's condition compelled that, but our protocol gave us only four minutes on scene after loading the patient before the traffic computer moved us.

"Suction now," I told Fairley. The red blot obstructing my view cleared and I advanced the lightsource. With the man's neck forward and his jaw slack, the airway was not visible. "Try hoisting the jaw." That helped a little. "Pull his tongue." A blood-streaked pink wall heaved up, leaving a dark crease that might be the opening I was looking for. "More," I said.

"I'm nearly pulling his tongue out now," warned Fairley.

"OK. I can see—" On one end of the crease a widening cleft showed; I slid the lightsource toward it. The cleft opened and flattened as the victim exhaled noisily. Blood obscured my view. "Irrigation and suction, deep," I told Fairley. I could see again, and moved the lightsource further. There—at the back—a pink cleft now full of blood-stained fluid—was the esophagus. I hoped. Emergency care specialists are still fighting over the best use—if any—of the esophageal obturator, which closes off the passage to the stomach, but our medical director had a good reason for insisting that the esophagus be plugged first. When someone vomits in a zero-G ambulance, it's a worse mess than Earthside.

I advanced the esophageal obturator and it slid easily into the cleft. Now I had to find the tracheal opening, ventral to the esophagus. At the victim's next breath, I saw for an instant the white V of the vocal cords, almost drowned in blood. I pushed the endotracheal tube forward. Even with the guide channel,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

I had trouble forcing the tube around the sharp bend of the flexed neck. At last I had it lined up, and slipped it through the larynx. "Got it!" I inflated the cuff.

"Here's the tape." Fairley handed me a strip of tape and I wound it around the tube and onto the man's face to keep the tube from slipping out of place. While I taped, he hooked the oxygen to the endotracheal tube and set the meters.

And then the Zero lurched sharply to the left. My hand, still on the tape, ripped it off the man's face with such force that the ET tube came out.

I don't know what we said during the next few seconds—it's on tape somewhere, but I'm not really interested—but I do know what we did. We tried desperately to keep an oxygen mask on the victim's face while the Zero jerked us from side to side. We watched the VS monitors as the signs went downhill . . . listened to the gurgle of blood in the airway . . . tried to suction, and nearly impaled him on the suction tubing as the Zero shot off in another unpredictable direction. It was hopeless to try to intubate. It was hopeless to try to start an IV. It was hopeless, start to finish, and when the deathly efficient Traffic Computer docked us at last, the man was dead. Malcolm Berenson, technician, electronic, second class. Father of two, we found out later, with another on the way.

I came out of the ER, after the resuscitation had failed, in the blackest mood I'd been in since NASA first announced it didn't want female astronauts, back when I was in grade school and didn't know girls were supposed to be second class. Fairley, a step behind me, radiated grimness. It didn't help a bit when we met the man's work crew on their way to find out how he was. We were all very polite about it, but that didn't bring Berenson back . . . nor had we.

Our shift was over, and Fairley and I went back to the off-duty quarters area without speaking. Paula Arnold and Jeff Sevier (Blue Zero, Shift 3), and Ginny Buchanan were in the common room, glooming over coffee. I went to the machine and dialed myself a lemonade. Fairley slumped into one of the seats in front of the computer display screen.

"How'd it happen?" asked Paula. That was brave of her; I wouldn't have spoken to me yet.

"That stinking Traffic Computer, of course." Fairley answered before I could. "Pat had just gotten a tube down . . . and it wasn't easy . . . and the computer jerked us around before we could get it tied down."

"Guy'd been crushed by a conduit load," I added. "Powerpack bent all to hell, neck ring bent, maybe, and Fairley couldn't get an IV past that all-too protective suit. He had a pneumothorax —we'd found that out in the ER—and heaven only knows what else."

Jeff, Blue Zero's senior crew, drained his coffee and stood. "Sorry you had to take one in our sector. Especially one like that—"

"It's OK, Jeff—"

"No, dammit, it's not. I mean, sure you take up the slack for us and we do for you and that's all squeaky clean. But it's not OK that we've been up here for five months and haven't saved a single EVA major trauma."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"That femur fracture?"

"You know what I mean. And we lost the guy with the broken ankle—a broken ankle of all things—because his suit failed and couldn't patch in an air supply."

"We might as well hang it up where the Zeros are concerned." said Paula. "Inside we do as well as Earthside, but out there, which is where we're needed most, we can't do diddly squat."

Sector Green's crew, coming off duty, paused in the doorway.

"Another bummer?" asked Juan.

"Yeah," I said. "All the usual trimmings."

"Tough," he said. "By the way, Pat, you've got mail in the bin." I nodded, but didn't move. I wasn't in the mood for mail from anyone.

"I think we ought to go tell 'em." Ginny stretched as she spoke. "If we don't, they'll come storming in griping about how we're costing 'em a bundle and not producing."

"They try that and I'll give them what they won't forget." Juan's partner Ivan stomped over to the drink machine as if it were a NASA rep. Ivan is Irish, not Russian (his mother had a sense of humor, he says), but big enough that we nicknamed him Bear.

As if in answer, the comunit chimed for our attention. "All off-duty Zero crews please assemble in Blue 345. All off-duty Zero crews please assemble in Blue 345, immediately. On-duty Zero crews switch your comunits to Internal, Channel 7 please. Agenda item for assembly is unacceptable losses in EVA operations."

"Those . . . those utter—" Paula's voice trailed away in disgust.

"Bastards," said Jeff.

"Camel droppings," offered Juan.

I was already headed back to Sector Blue, angry enough to be quiet. Soon we were all together, ducking down to Two Ring, and around to Blue, then back out and right along the ring to the big conference room. We were joined along the way by Jill and Bob Delgracio (Blue Zero, shift two), and Jess Hightower, Ginny's partner (Red Zero, shift two), who drew an expressive finger across his neck and pointed to the room ahead. Already in the room were Jim Hackett, our acting director, Dr. Mossler, our medical director, another physician, two huskies in construction workers' coveralls, and a bunch of people in the spaceworker's version of a gray flannel suit. And standing against one wall, wary as steers in a stockyard, were the rest of our fellow paramedics. When we came in, everyone drifted to seats, all of the Zero crews clumped together and the others somewhat separated. Jim Hackett stayed on his feet and glanced around for attention.

"You all know, I suppose, why this meeting has been called," he began. The physicians and construction men nodded crisply. I don't think any of the paramedics moved a muscle. "Although the EMS program we developed has worked well inside the station, it is not up to expectations outside, and we feel that after six months some improvement should have been seen. It's not just today's . . uh . . . problem—" he looked at me and I glared back. He looked away. "Now we all know you people have tried, but you don't seem to be getting anywhere. We think it's

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

time to turn elsewhere for suggestions—''

''Suggestions!'' That was Ginny erupting. ''And what are you going to do with suggestions? File 'em where you filed ours? You can't shift blame on us; you haven't listened to anything we've said, and when was the last time you rode a unit, Hackett?'' I couldn't have said it better.

''There's just no way we can do effective EMS up here, as it is.'' Fairley broke in, sounding as disgusted as I felt. ''The whole point is quick response, evaluation, and being able to stabilize ABCs. But we can't get to the airway, the suits frustrate any attempt at assisted ventilations, and we can't do anything about circulation until we can expose some skin. Which takes too long.''

''And you keep saying 'We can't modify suits, we can't modify traffic control, we can't do this or that,' but you want us to work miracles,'' added Ginny.

''You can take your miracles,'' muttered Jeff.

''There's got to be some answer,'' said one of the flannel suits. ''Surely you people—so experienced—can devise new techniques—''

''And when we do you'll tell us it's too expensive! We have devised new techniques, and they get shot down. I'm sick of it.'' I was so angry I was shaking all over. ''Next time you can go out and try to intubate somebody blowing blood in your face, and try to do it when you can't manipulate the neck or get to a superficial vein. Then when you get it done, the dumb computer shoves the unit off somewhere without warning, and you lose the connection and the guy dies before you can get the tube back in.''

''The tube should have been secured,'' snapped the other physician, not Mossler. Just like a doctor; they can always find something wrong with whatever you've done. ''And even if it came out, you could use a bag-mask.''

''I was securing the tube when the unit moved,'' I snapped back. ''And I've held tubes and taped tubes on the roughest riding ambulances on the worst road in the Rockies. But that miserable computer—''

''Garbage in, garbage out,'' snarled the programming chief, a tall skinny blond named Pillaffson. ''Don't blame the computer. You asked for a fast transfer; it's on the record.''

''Fast transfer, yes. Goddam Brahma bull ride, no.'' That was Jess, our oldest and wiliest paramedic. ''You think you're so smart at designing rides; you just try to work on an injury while you're being thrown all over the unit.''

''The workers don't complain.''

''They're not trying to do precision work on transfer, either. They're strapped in. Besides, how often are they routed fast?''

''It's the same thing here that they had on Earth when EMS first started,'' said Paula. ''Trying to get the people who make the protocols out in the units to see what it's like out there.''

We had obviously thrown the others off balance, and we could practically see their prepared speeches being dumped. Mossler looked concerned and thoughtful—a doctor's best defense, I thought sourly. The other doctor looked mad, his lips a thin line.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"OK," said another flannel-suiter. "What can we do?"

"Go home," muttered someone on the comlink between the duty crews and the conference.

"Quit," muttered someone else.

"Just one constructive change?" pleaded the rep.

"A suit we can get into from the outside," I said. "Give us back our direct access to vital signs and the ABCs."

"But Godalmighty, Pat, do you realize how expensive it'd be to redesign all those suits?"

"Look, right now you're paying for an expensive EMS that's not doing you any good. Inside the station, yes. We've saved quite a few there. But outside, everything you've spent on us is wasted. We've lost every single bad trauma since we've been here, and only three of them would have been lost on Earth. Everything you put into the Zeros, our EVA gear—all of it—is wasted. Either give up the idea of EMS outside the station, or realize that this approach won't work."

"Well, we'll start looking at it—"

"Changes in suit design will have to go through union contract negotiations," interrupted one of the construction men. His name tag read Construction Chief Blanchard. "We had to fight for those safety couplings, and now you want to get rid of 'em."

"No. Not get rid of them. I agree they probably save a lot of head injuries. But *modify* them so we can get to the patient's airway and some other vital areas."

The meeting broke into small clumps and clots of muttering, arguing, and handwaving. Pillaffson, the programming chief, edged through the clumps to bear down on Fairley and me.

"Look," he began. "We've got to have the Traffic Computer pilot your Zeros. We can't allow any slow-reaction-time humans to pilot inside the work ring. We found that out when we started construction up here. We'd have more wrecks than any EMS could take care of."

"Can't it at least tell us when it's going to fire, and which direction?"

"Not enough in advance to help you. It's making these decisions in real time, relative to the movements of all other EVA traffic—not just vehicles, but individuals, tools, equipment—and trying not to interfere more than necessary with the schedule. The unpowered movements can't be deflected, either. Now is it really that bad?"

"Worse. I'll show you. Just a sec—" Fairley peered around the room and beckoned to several people. "Dr. Mossler, Chief Blanchard, why don't you let us show you what we're talking about. You, too, Mr. Pillaffson. We'll take a closed suit, simulating a victim—"

"Why not me, in my suit?" asked Blanchard. "I work out there every day."

"Great. Five will crowd the Zero, but we can patch the rest in on the com—"

"Or we can set up our own demonstrations," said Ginny. "We have three back-up Zeros."

"We'll need to simulate a call location," said Fairley, when we were all crowded into the unit. I was "piloting" this time, and he was in the couch to my right. Behind us, in the working

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

compartment, Mossler and Pillaffson clutched the grabbars, and Blanchard, in full suit, lay webbed to the litter.

"I can do that, with a vocal," said Pillaffson.

"Fine," said Fairley. "At least a half-sector away, please."

We couldn't hear his mutter to the computer, but we heard the computer up front: "Station Central to Baker Blue Zero." (Baker, because we were a back-up unit.)

"Go ahead, Central."

"Code Three, Sector Yellow."

"Route."

"Link band 47."

"Linked."

"Disconnect when ready."

"Disconnect." I pushed the button. With a sharp shove "back" and "down" we were on our way. This time two direction changes slammed us from side to side. When we "stopped," strung in a web of graplons, I noticed that our passengers were hanging on with both arms.

"It is a bit rough back here," conceded the doctor. "Feels worse when you aren't strapped in."

"Now what?" asked Pillaffson.

"Now we pretend Chief Blanchard has a major torso trauma." Fairley wormed past the others to the litter. I followed, as Fairley pointed out the vital signs monitor on Blanchard's helmet. "If nothing has damaged this side of the helmet, or the connections inside, we get a readout of pulse, blood pressure, and arterial pO_2. His are fine, now, but the one we just lost had a pulse of 140, blood pressure 60/0, and pO_2 40. Now for the suit." He reached down and began to undo Blanchard's helmet connection. The shock absorbing ability built into the suit made it a complicated process: dual seals and interlocks all around the neck. The faceplate could not be opened separately, as ours could, so we had no access until the entire helmet was off.

When we did manage to slide the helmet off, Blanchard's head and neck were held in neutral position by the high protective steel rings on the coupling. To extend his neck (and thus, in an unconscious patient, open the airway) we had to take off these rings. Theoretically, the rings were jointed and could be unfastened for easy opening. In practice, the workers inserted themselves into their suits from the belly, since the neck rings were easily large enough to push a head through. The rings were stiff from disuse, and hellish hard to undo.

"Here's the second problem," I said. "Once the helmet is off, we need to hook the VS sensors to our monitoring devices. The pO_2 sensor is no problem, but there's no good way to get blood pressure and cardiac function. We can't use *our* sensors because they're designed for a specific body part we can't get to. The best we can do is a Doppler pickup on the carotid pulse, and you see—" I demonstrated, "—what a lousy access we have to the carotid."

"You can palpate a pulse, I hope, Pat," said Mossler. I managed not to glare. Doctors! They've always suspected us of not knowing our work.

"Certainly, Dr. Mossler, but not while hanging an IV or doing an intubation. Constant monitoring by palpation means constant use of one hand. And it still doesn't give us blood pres-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

sure. Another thing—" I gestured to Fairley, who was removing one of Blanchard's suit gloves. "As you know, the availability of IV fluid therapy in the field made a dramatic difference in trauma management on Earth. It would here, too, if we could get to a useful vein. Chief Blanchard is not in shock, but notice that even so his hand veins aren't standing out. And we can't put on a tourniquet to engorge them, thanks to the suit. If we needed to pour in fluid replacement, we'd need to get to a larger vein . . . but look what the suit does at wrist and elbow." Fairley tapped the corrugated plastic joint. "This stuff is designed to be tough and impervious, and it sure is. We can't cut it."

"I see what you mean," said Mossler, peering past Fairley's hands. "Can't you open the suit torso, though? Could you do a sub-clavian stick, or a jugular?" I noticed Blanchard's face pale at that last word.

"That's a yes and no question, Doc," said Fairley. "That protective neck portion comes down so low that if you can't undo the neck rings you really can't do a subclavian. You can open the suit, but it's so stiff that you can't keep it far enough open to do much. Try it and see."

Mossler fumbled at the exterior fastenings of Blanchard's suit and pried it apart in the midline. Unlike the EVA suits of shuttle era, it was made in one piece to give extra protection to the torso, and to support the extended EVA powerpacks and sanitary arrangements that let construction workers spend a full shift outside. It snapped back together like a coin purse the instant Mossler tried to let go of one side to pick up an instrument. I managed not to snicker.

"Ouch!" he said, and jerked his other hand out. "Hmm. So you really can't attach the cardiac monitor easily."

"No. You can do it, but it takes two people. And defibrillation is out of the question."

"Wait a minute," said Blanchard. "I don't have this much trouble getting into this thing. Why is it so much worse when I'm inside?"

"It's one of the safety features," I said. "Think what you do before you get out of it. You release a valve that lets the fluid in the suit system back to its reservoir. Unless someone hits that release, the pressure of your body parts in the suit keeps the torso section rigid. And the release is carefully designed so that it can't be hit from outside."

"Oh . . . yeah . . . I do, don't I? I've gotten so used to this thing that I forgot."

"Very few people could describe what they do when they button a button," said Fairley. "That suit's like an old shirt to you." He worked his way back into the forward compartment.

I was setting up an IV line, reaching around the extra bodies, when Fairley added another bit of realism. I saw him reach for the controls, but didn't say a word. They needed to know what "without warning" meant. I made sure I had two feet firmly on the Velcro unit lining, but the others weren't so lucky.

Mossler had just turned to Pillaffson when the unit accelerated "up" and "back/left" strongly. Pillaffson tumbled against the wall opposite the litter, and for one awful second I thought he'd activated the patient airlock. Mossler,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

who happened to have both his feet attached, folded over and hit his head on the forward bulkhead. I managed to catch a grabbar with one flailing arm and stay put, but the IV setup slipped out of my other hand and slithered into the front with Fairley. Abruptly we were back in free-fall. After a few seconds the next thrust pushed us "forward" and "left," and the IV bag sailed through the cockpit opening, catching Mossler (who'd managed to stand up again and find a grabbar) in the midsection. The tubing was royally snarled—even Pillaffson had a loop around one foot. We were back in free-fall in a second or so, and Pillaffson got himself straightened out and attached to Velcro and webbing. Mossler peeled the IV bag off his middle and hitched it to the wall by its Velcro patch.

"Does this happen every time?" he asked.

"Sure does. That isn't all, either. Here—" I shifted cautiously around Mossler, ready for another acceleration, but none came before I reached the small seat at the head of the litter. After strapping in, I plucked an oxygen mask from its attachment on the wall, and put a hand on either side of Blanchard's head. "Now watch what happens when I try to keep the mask on."

This time two quick thrusts—right, then down/right—shoved us around. They could see how I'd had to use both hands, hard, to keep the mask more-or-less on Blanchard's face.

"I see what you mean about not having a hand free," said Mossler. "But couldn't you get all the necessary stuff hitched up before starting back to the ER?"

"No. Remember that work order we griped about when we first came up—about time-on-scene?"

Mossler shook his head. "I wasn't medical director then. Which one?"

Fairley spoke up from the front compartment. "Whoever it was—maybe Halberson—had a thing about paramedics not spending too long at the scene. Said he'd had trouble enough down-station with smart-alecs horsing around playing surgeon at a car wreck—" There was no mistaking Fairley's bitterness; his drawl carried a whiplash on the end of each word. "So he insisted on a time limit at the scene, no matter what. When that limit is up, the Traffic Computer takes us off, and that's it."

"But—" Mossler began, but I interrupted him.

"And in case you think it's long enough, Dr. Mossler, on this simulated run we had two minutes more than we're allowed before the first acceleration. It wouldn't be so bad if we could work while in transit, but as you've seen—" And just then another surge of acceleration caught us all unprepared. I lost the mask, and my other hand clipped Blanchard on the nose. Fairley swore as his hand hit the edge of the seat frame, and both our standing passengers let out a yelp. Then we heard the smug tone that meant we were docked at the ER lock, and a sharp warning blip that meant another Zero was coming in behind us.

"Now," I said, "we have two minutes to unload our patient before the next one docks." I was working as I spoke, and Fairley, coming through to help me, pushed our passengers on out the docking lock. Then we wrestled the litter

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

with Blanchard still on it out of the narrow opening, and along the passage to the ER.

When we let Blanchard off the stretcher and he'd peeled himself out of his suit, he leaned on the passage wall outside the ER, shaking his head.

"I had no idea what it was like in there," he said. "I can see that you can't do your work as it is—"

"Pat," interrupted Dr. Mossler. Blanchard glared. "I just thought of something. They've had those fingertip blood-pressure gauges for a decade now, on Earth. You can get the gloves off—why not use those?"

Fairley and I glanced at each other. Typical doctor again. Mossler's background was industrial medicine, not emergency or trauma. "Because," I began slowly, "if the blood pressure is low enough, say from a serious injury—" He caught on, quickly.

"Oh . . . yeah . . . sure. Peripheral shutdown. Not good enough. Damn."

"About these suits," said Blanchard, still intent. "Even if I get the union behind it, it'll take months—years, maybe—to redesign and make the things. They still have to protect us, you know."

"That's true—" I broke off as Paula and Jeff came out of the ER with two of the "gray flannel suit" administrators, both pale. Jeff jumped on our chief programmer immediately.

"Now you see what we mean, don't you?" he demanded. "We can't do anything with that stupid computer jerking the Zeros all over the place."

Pillaffson stiffened. "The computer is not stupid! Whatever problems you have are not the fault of the computer, nor, I might add, of its programs. They do exactly what they were designed to do, which is to keep all traffic around the station in order. If it weren't for that 'stupid computer' as you call it, this station would have been battered to bits months ago. You aren't even a licensed shuttle pilot!" I could have slugged Jeff . . . we had just gotten Pillaffson convinced, I'd thought, and he had to make him mad.

Jeff opened his mouth, but once more Mossler interrupted. This time I was glad.

"Well, one thing that wouldn't be hard to change—and wouldn't affect the traffic computer's control, as I understand—is the time-on-scene delay. Surely it would be possible to let the paramedics initiate the return to ER just as they initiate undock in the first place, wouldn't it?"

Pillaffson was still fuming, but he did consider Mossler's question. There's this about doctors—you can't ignore them. "Yes," he said finally. "That could be changed, though a very long delay would always involve some drift, and in the end could require a powered adjustment."

"Could that adjustment give a warning?" asked Paula. "I don't mean a complete readout, just a warning bell or something."

"I suppose it could," said Pillaffson ungraciously. "If you really need it. But of course any changes at all in Station software must be approved by the Station director. And the EMS director and medical director would have to convince him that these changes are necessary."

Mossler grinned. "As far as the medical staff are concerned, I think a trip

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

like the one I had would convince them." I was surprised; he actually seemed to be trying to help us.

The ER disgorged another of the teams into the already crowded passage, and we shifted toward a larger area, still talking. I didn't notice that Mossler was no longer with us until after all the crews had reassembled, and the arm-waving was intense again. Then Mossler appeared at my side with a big grin on his face (it occurred to me for the first time that he was actually a nice guy), and called for quiet.

As the talking and yelling quieted to muttering, and people turned to look at him, he spoke.

"I want to thank the Zero crews," he said, "for giving the rest of us a much clearer picture of their problems." He caught my eye, and smiled. From anyone else, it would have been a personal sort of smile. "We've made one change already. I got hold of Jim Hackett and the Station director, and the automatic limit to time-on-scene is gone. As of now, when you have stabilized your patient on scene, you'll have to contact the Traffic Computer again and initiate movement. You will hear a tone every three minutes the graplons are on, just as a reminder, and if the Computer has to shift you for some reason, you'll hear a double tone before that. It—"

"How'd you do that without my consent?" yelled Pillaffson. "Any change in the programming—"

"It's not exactly a change," insisted Mossler. "It's just putting the Zeros back in the same category as everything else . . . your duty programmer said all that was necessary was removing the delay limit."

"I still think it shouldn't have gone past me." Pillaffson scowled at us. "Seems to me you've all gotten excited about this, and ready to change everything, without taking the time to see what the changes will do."

I saw Jeff open his mouth again, but Paula grabbed his arm. He subsided. Mossler cocked his head. "I'm sorry, Steve, if you thought we were bypassing you on purpose. I knew you'd been out there, and seen the problem, and you had agreed that removing the delay limit wouldn't affect the traffic computer's management much."

"Well, thanks for that. If you have any more bright ideas for my computers, I hope you'll see that they go through channels." Pillaffson turned on his heel and went out. For a moment everyone just stood there, watching, then the discussions began again.

The group broke up a few minutes later, with the administrator types still touchy about cost-analysis and estimate overruns. I saw Blanchard and Mossler deep in conversation in one corner, but I was too spent to eavesdrop. It was halfway through the next shift, and I wanted to sleep in peace and quiet for a few hours. I didn't remember my mail until I was already showered and ready to sleep, but padded back out to the terminal in the off-duty lounge. I called in, and they put my file on.

It was short and bad: a note and a news item. My old partner, Dave, had been injured while working a wreck. Paraplegia. I shivered, and thought of the four years we'd been together, working 24 hour shifts in an advanced life support unit that covered everything from cardiac arrests to newborn trans-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

port to mountain rescue. He would have been with me on the Station—should have been—but he'd fallen for a resident in pediatric surgery. I wondered if she was with him now. I tapped a few keys, asking for a printout, and turned the screen down. Tired as I was, it was going to be hard to sleep. And of course I couldn't do anything, not from the Station. I read the printout twice more before finally falling asleep.

On my next workshift, Mossler dropped by our station. "I've been talking to the other crews about this suit problem. Have you got any ideas?"

I looked at Fairley, who shook his head, and back at Mossler. "I'm not sure," I said. "When we first came up, I tried to figure out a way to hold the suit open. But that means extra equipment and something else to spring loose." I didn't really care. I kept seeing Dave's face—and, to be honest, Dave's strong body. We weren't lovers, but you can't work that close and not know what someone looks like. Not our kind of work. I wished Mossler would go away. Doctors always messed things up. If it hadn't been for Sally, Dave would be up here—safe—not crippled in some rehab hospital. If I'd been his partner, he wouldn't have had to go back across the road for anything, either. That's what the clipping had said, the one a friend of mine had sent—his partner had forgotten something, and Dave had gone back . . . I shook myself into the present.

"Jeff Sevier had something," Fairley was saying. "Remember that drawing he carried around for the first couple of months, Pat? It looked sort of like a big salad server with a bar on it to hold the tongs apart."

"Yeah, but they said it wouldn't work." I went back to filling out the daily log. Something always happens to good ideas—and to good people, too.

"Who said—and why?" Mossler looked interested.

"I don't remember. Something about the tongs damaging the suit opening, or something like that." Fairley gave me a worried glance. I hadn't said anything about my mail, but I must have looked odd. I managed a smile.

"With every suit a custom model, they ought to realize that if the person in the suit dies, it won't matter if the opening is messed up."

"Think about it," Dr. Mossler said. "I'll talk to Jeff. And what about starting IVs?"

"I'd rather have an arm for blood pressure," I said. "If we knew blood pressure for sure—"

"IVs for me, though." Fairley drummed his fingers on the desk. "That elbow joint is the worst. We've got to get above the wrist." I was beginning to be interested in spite of myself. "Maybe it could unscrew—" I twisted my hands, and then laughed. "That won't work."

Fairley sat up suddenly. "Wait. How's that stuff fastened on, anyhow?"

"Glue? It can't be just sewn in."

Fairley was throwing open the locker and dragging out his suit. "Confounded thing! You can't even *see* inside. Pat, get me a light."

I got the emergency flasher from its bracket and passed it over. "What are you looking for?"

"How it's fastened . . . I just saw

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

something." He glared at Mossler and me when we didn't respond. "Don't you . . . ? You don't. What if Pat's right? What if it can just screw in, like a jar lid?"

Mossler's brow furrowed. "For one thing, it's not a screw—the corrugations are parallel."

"Yeah, they are now. Does that mean they have to be? A screw seal can be airtight all right—look at canning jars."

"Would screw corrugations have the flexibility?" I asked.

"Sure they would. Didn't you ever have a Slinky? You know, that spring toy that goes down stairs?" He was peering into the sleeve of his suit with the flasher. "Aha. Now why didn't I ever notice that?"

"What?"

"It's—kind of a ring, that's stitched in—gunk, too. Glue, I suppose, or fabric cement—"

"Who designed the suits in the first place?" I asked, trying without any luck to see past Fairley's ear.

"I don't know," said Mossler. "But I think we can find out who's making them now, and see about changes."

"We can do better than that," said Fairley firmly. "Pat, doesn't the Hobby Corner have a heat-setting—"

"It sure does," I broke in. "I'd forgotten Lillian and her models. I'll bet she could form us an elbow joint."

"Wait a minute. You mean make one up here?" Mossler looked worried. "Whose suit are you going to take apart?"

"Mine." We both said it, then exchanged glances.

"My suit," said Fairley. "I thought of it."

"I said screws first," I said. "My suit."

"Not you," said Mossler. "You're both active crew. What if—" He let it trail off, but we knew what he meant. What if it didn't hold?

"We can test it first." I had my suit, too, then remembered. "But not until the end of the shift. Blast."

Fairley began to chuckle. "The thought of getting access to a real, honest-to-goodness arm—"

"If it works. If it were that simple, Fairley, somebody would have thought of it before." I went back to my paperwork, and my thoughts. At least it had been a distraction.

It wasn't that simple. Lillian, whose hobby was making models for the role-playing gamers, let us know that at once. She may be a mild-mannered paper-pusher during her workshifts, but in the crafts lab she's an expert—and knows it.

"I do molds," she said firmly. "Molds. Irregular molds. What you want is a cylinder with molded corrugations, in a spiral, that will screw into . . . what were you going to use for the other part? Plastic? Metal?"

"We hadn't thought—"

"I can tell. Do you know anything about screws at all? What pitch did you want?"

"Pitch?"

"God's blood, I have to start teaching beginning mechanics again." Lillian sighed. "Now look—" she was sketching on a yellow pad. "Let's take just the male screw." Someone snickered—I thought it was Ginny—and Lillian scowled. "None of that. It's the proper

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

term. Now when you talk about screws, you have to specify the pitch, and the radius, and the handedness, and the threads per centimeter. That's for a cylindrical screw, which is what we have here. If you were talking about a conical screw, it would be trickier."

"Yeah, well—"

"But you're not. Good. But now you want it to screw into something—the female screw—and even those of you without any background should be able to see that this requires the same pitch and thread count, and just enough smaller radius that the screw will fit snugly and not bind."

"OK." I thought that made sense. "I can see that. But why can't we use a simple ring for the female part? I've seen caps that screwed on past a single ring."

"Yes. But I wouldn't want to bet my life on that, and you shouldn't. Those ring-held screws aren't for anything important. Even canning jars have two and a half or more threads to hold."

"Well, if canning jars are so common, what's hard about making male and female threads?"

Lillian looked disgusted. "Would you like to sculpt an IV bag? Or a hypodermic syringe? It's not hard at all with the right machinery, which we haven't got. I can make a terrific thief, and a passable dragon, but I cannot hand-carve matching male and female threads. Yes, it was done in the old days, but not by me, and I'm not risking your lives on it."

"Oh."

"And neither can you."

She didn't have to add that. I knew that already. I opened my mouth and shut it again, and looked at the others. They looked as blank as my mind. We shuffled out, as Lillian turned back to her latest work, a busty female with a double-headed axe. I never have understood that sort of thing. If you want an exciting life, work on an ambulance; don't play pretend games.

Having our best idea go bust didn't help my mood. I tried to think what to write Dave, and what I could do to help, and kept coming back to how stupid he was to hang around waiting for a pediatric surgeon to fall for him. Any paramedic knows that doctors don't have anything but an extra degree and a lot of pride—and the money, of course. I was still depressed and glooming over the latest issue of a magazine for water pollution control officers (and I never have known how that got into our common room), when Jill Delgracio bounced in. I don't know what it would take to depress Jill; she might even handle something like Dave's injury with the same perkiness. If she weren't also a damn good ambulance jockey, I'd hate her.

"Guess what? Bob found a female screw."

"A what?" It took me a minute to figure out what she meant.

"He was talking to an electrician who has a friend who's working in the new construction, and he's found what he thinks will work." Bob appeared in the door behind her, grinning from ear to ear. He's almost as upbeat as Jill, but a little quieter about it.

"Look at this, Pat." I looked. It looked like a few coils of heavy cable with a plastic skin that kept the coils from separating very far. When I said

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

so, he nodded. "Yes it is, sort of. That is, it's cable covered with heavy plastic: it's the computer connections for the docking bay out on Purple Four. It spirals out, but has the plastic to keep it from being stretched. And it just fits into a suit arm . . ."

"How do you know that?" I was wide awake now, and sitting up.

"Because I cut the elbow joint out of mine, and tried it." He looked smug and apprehensive together. He should have—our suits, we had been told, were worth more than a year's salary. "I can always live on Jill's money," he went on, grinning.

"Have you tried it?" I asked.

"In the airlock—partway. It hissed a little, but—"

"Hissed!"

"Well, yeah—now I need to figure a seal that will still unscrew."

"That's easy," said Fairley, who had overheard the last as he came in. "Just use the fat in your head."

Bob had his mouth open to bite back when Jill stopped him. "It might work after all. No, not that fat—but that thick sealant grease they use—"

We trooped back to Lillian in the hobby shop; she was painting howdahs on a lot of little elephants with a brush that looked like no more than three fine hairs. She gave Bob the look he deserved, then took his elbow joint apart and examined it.

"Yeah. OK. I see what you mean. I'll bet a double ring, sealed with that white gook, would work. And maybe an elastic thingo between them, to be sure." Jill had called Mossler on intercom, and he arrived just as Lillian had it all back together. Mossler turned white then red when he realized what Bob had done, but recovered enough to supervise the next airlock test. The joint held without losing pressure, and unscrewed easily in the ER.

"Now all we have to do," said Mossler, "is convince the unions and the bureaucrats that someone crazy enough to design and test this has made a better joint than they did. You're going to have a rugged time convincing construction workers to trust a screw-on arm or leg." He hitched a hip onto the gurney in the trauma room, where we'd brought the suit after testing.

"I just thought of something else," said Jill. "Bob, you pulled your hand up into the arm while we were turning it, didn't you? An unconscious person couldn't—"

"No, but the gloves come off. You've got a point, though; we can't use this on legs until we can do something about the feet."

"The main thing is, we can get to a good vein, and get blood pressure. How's that can opener coming, Doc?"

Mossler frowned. "Jeff's idea was good, but when we tried it the thing kept falling over if anyone bumped it. You don't need something else to have to hold in place. I've been working on it—look at this." He rummaged in the bottom drawer of a cabinet, and pulled out something that looked like Jeff's original "salad-tongs" crossed with an equine speculum. When he demonstrated, on a construction suit they'd brought to the ER (I could see the scrubbed-off traces of a man's name, and realized this was one we'd lost), the device pried open the midline and held it—until Mossler touched it with one

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

finger. Then it fell, as he'd said, and the suit snapped shut as the tongs flew off the table.

"I thought of adding locking nippers at the bottom," he said. "But that's something else to break, or fiddle with. Jeff thought of adding another leg to it, but you need all the access you can get. If you've got any ideas, tell me."

We stared at the thing for a few minutes. Then Fairley started chuckling, and the rest of us glared at him. He shook his head, and laughed harder.

"I don't get it," said Bob, a little testily.

"I was thinking of my grandmother. Smart old lady—the first woman to get an engineering degree from her university."

"So?"

"So her word of wisdom to the whole family was 'don't fight gravity'—if something has a strong tendency to go one way, make it do what you want while it's doing what *it* wants. Claims she got her degree by agreeing with her profs that women were indeed frivolous, flirtatious, and bound to quit when they got married. They were so charmed by her honesty in admitting that the only reason she wanted to take calculus was to meet intelligent men that they let her into the class. Now—what I see is something that wants to fall over. OK. Fix it so it holds the suit open while it's lying flat."

"But it—" Mossler stopped in midsentence and squinted. "By—you know, you're right, Fairley. It *could* work lying flat. In fact it'd work better lying flat." Right before our eyes he grabbed the thing off the floor and started beating it into a new shape. I'd never thought of doctors as having any skill with tools, other than scalpels. Mossler just wasn't like the doctors I'd known back home, the kind who chewed you out for every little thing without knowing damn-all about hauling someone out of a smashed car at 2 A.M. in the rain. If Dave was going to fall for a doctor, why couldn't it have been someone like Mossler? I wouldn't have minded that so much. Sally always looked at me as if I should be carrying her bag and opening doors for the princess.

Thinking of Sally reminded me that I had to write Dave. I had to. I glanced at the clock, and it gave me no help at all; I had plenty of time before my next work shift. Fairley followed me into the off-duty lounge, and cleared his throat.

"Uh—Pat?"

I looked at him, almost grateful for an interruption. I just hoped he wouldn't start up again; we'd settled our lack of passionate involvement in the first month on Station. "What?"

"You've been acting funny since the Berenson run. It still bothering you?"

I shook my head.

"Something is. You've been . . . the others have noticed, too."

I thought of telling him where to go, but on the Station he couldn't. Silently I took the printout from my locker and handed it to him. He should know the name; I'd told him about Dave before. His face hardened.

"Tough," he said finally, handing me the printout without meeting my eyes. "That's bad."

"Yeah." Suddenly I wanted to cry, and I wanted a shoulder to cry on. But Fairley—for all the complex reasons the psychs still don't know—wouldn't do.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"From what you've said—he'll take this really hard."

"Anyone would," I said, and surprised myself with the venom in my voice.

"Yeah. Well—I'm sorry, Pat."

"It's not me," I said, still sharply. "And I can't—he's not—"

"He's going with that doctor, didn't you say?"

"Yeah." I took a long shaky breath. "I hope she's there." I hope she cares, I thought savagely to myself. I hope she knows what she's done.

"I'm sorry," Fairley said again. "For anyone—but a good paramedic—that's bad. Listen, the others—do you want me to tell them what's on your mind?"

I nodded. They had a right to know, and—being paramedics themselves—they'd care as much as anyone could without knowing Dave. Fairley left without saying any more, and I poked around on the terminal, writing and rewriting a flat little note that said nothing I really wanted to say. Words wouldn't say it anyway. I had just sent it on to the Communications Center when Mossler showed up.

I have reasons for my feelings about doctors. Any paramedic has seen enough to know what I mean, and the details don't matter. But Mossler didn't seem quite as bad as some others. He was a clear improvement over Halberson, our first medical director, the one who had insisted on the time-on-scene limit. He had listened to us, more than once. And I couldn't ignore the way he kept turning up and smiling at me. I may not like doctors, but I'm normal enough to like being smiled at by intelligent young men.

Now he gave me a friendly grin and settled into one of the lounge chairs. "We're making progress, Pat—any more good ideas?"

"No." I finished closing down my files in the terminal. "Not now."

"You're upset about something—should I come back later?"

"A friend of mine—" I told him, in one long bare sentence, about Dave's accident. He whistled.

"That's too bad. Had you known him long?"

"We were partners over four years." I looked away, expecting the usual question, but Mossler didn't ask that one.

"I'm surprised he didn't come up here with you," he said quietly. "He didn't want to look at the high frontier, huh?"

"It wasn't that." He waited, silently, and eventually I looked at him. He had that professional concerned look some doctors have, alert and listening. It's very effective, until you realize it has about the same depth of meaning as a video-star's eyes and open mouth. Right then it made me furious.

"He was in love," I said, biting off each word. "With a doctor—a pediatric surgeon in her last year of residency. *She* didn't want to take a year off to come up here. She didn't want Dave to come. Not that she's given him any promises. Says she's not sure. Says she wants to finish and get her career going."

"And you—?"

"I'm not in love with him." I gulped back that old rage and hurt, and went

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

on. It was true now, whatever it had been a long time ago. "But—I could count on him. For all those years—" I told Mossler some of that. The time we worked a kid with a broken neck down a four hundred foot cliff, a kid who's walking today because we did it right. All my life and his had hung on both our skills. The way we had worked wrecks, handled "family violence"—the polite name for rapes and wife beatings and too many murders. He'd saved my life more than once, and I'd saved his, and we'd both had the good sense—I'd thought then—not to mess up a good working relationship with anything else.

"It goes sour," I went on. "I saw plenty of that. Crews that start sleeping together end up fighting, or breaking up. We didn't. We were there for each other, 24 hours every other day, and I would trust my *life*—" My voice failed than, thinking of Dave crippled. I turned away, stiffened as Mossler came up behind me and touched my hair. "Don't—" I managed to say, and he went away. Then I cried it out, or most of it. I know what the rehab people say. Things are better now, and people in wheelchairs have regular sports and all that. But not for Dave. As if he were there talking to me, I knew he wanted nothing but what he'd done. And you can't be a paramedic when you're paralyzed below the waist.

Before I heard back from Dave, the crews had three more EVA trauma calls. Two made it in good shape —because of the change in the Traffic Computer, according to the crew.

"We actually got the IV started and running, and thoroughly secured," said Harry Gold, Red Zero, shift one. "And I got the oxygen mask taped on, and the tubing under control, and we were settled when Max called the computer. Terrific. Nothing came loose. And I was thinking, if we had wider elastic on the masks, that would help." We promptly tried wider elastic on the masks, and it did.

The third, though, nearly halted the whole project. We all had a version of Mossler's "can-opener," and about a dozen of the construction supervisors had volunteered to let their suits be modified with Bob's new screw-on elbow section. We thought we were lucky when the victim turned out to have on a modified suit. We were wrong.

Fairley and I got the call, about midway through our shift. Everything went well until after he had the man hooked to the stretcher frame. Then I heard a muffled curse in my headset.

"What?"

"This—wait. This is a bad one, Pat. And it's Blanchard."

As soon as the patient lock cycled in, I could see for myself. It looked like something had hit the right shoulder; we learned later that he'd been caught between an arriving packet and the ring frame itself. The cargo packet hadn't decelerated enough, and he'd ducked, forgetting that no gravity helped him drop. Anyway, the new elbow joint had been flattened. We'd tried to flatten it before, and the springy coils had always regained their shape—but this time they hadn't.

His vitals were bad; it was clearly a severe crushing injury. We got his helmet off, and I worked on the joint of the other arm. For some reason it re-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

sisted unscrewing; I cussed and kept after it. Fairley got oxygen going on him, and reached for the can opener.

That's when he stopped breathing. Like an idiot, I kept clawing at the elbow joint, until Fairley said "Pat!" I looked up. He was glaring at me, mouth bloodstained from mouth-to-mouth, and I scrambled for the Garfield set. He grabbed it, and I took the suction catheter and sponge forceps.

Fairley's one of the best intubators I've ever seen—and he had the endotracheal tube in place in seconds. We connected the oxygen tubing and ventilator, and watched our man's chest begin to rise and fall. His face pinked up. Fairley checked his pulse (fast) and I picked up Mossler's tool to open the suit.

Inside was a mess. There's not supposed to be anything that sharp on the inside of a suit, so even if someone is crushed they won't be punctured as well. But he had several broken ribs, and something (broken rib or suit component) had lacerated his side; blood smeared everything in sight. We thought about putting in a chest tube, and decided he could make it to ER first. We punched in a priority transfer, and rode out the roughness, not happy at all.

Medical wasn't happy either. The collapsed elbow joint had crushed his arm. Even though the human arm flattens out, it's not that flat. Six hours of microvascular surgery later, they still weren't sure he'd keep the arm. And everyone was very sure they wouldn't keep the new joint.

Except, of all people, Supervisor Blanchard, when he finally woke up.

"It's not perfect," he said. "But I'm alive—and I was hurt worse than Berenson. I won't lose my arm; I'm too stubborn—" (and he was right about that, too.) "You go back and redesign this thing so it won't collapse, but it'll still unscrew. It's a damn good idea, and I'll fight for it."

"All right," said Mossler, looking at the rest of the medical staff, and us. "I'll help—from this end. But there's something else." And now he looked at us, and I knew he had noticed our error on the transcriptions of the run. "Fancy gadgets are all very well—and we need them—but the most important thing is now, and always was, the basics. The ABCs." He held up his hand and ticked them off on his fingers: "Airway, breathing, circulation. I don't want my paramedics to get so clever they play around with new toys and forget to notice if the patient's breathing."

He didn't have to look at me like that. I was already convinced. For once I had to agree with my doctor's criticism—and I couldn't claim Mossler didn't know what it was like. He did.

"Hey, doc," said Blanchard, already looking more like a crew chief than a patient. "You lay off them—they got me here alive."

"I want them to get everyone here alive," said Mossler. "Everyone we possibly can."

When the group broke up, Mossler beckoned for me to come into his office. I expected another chewing out, but that wasn't what he had in mind. He offered me a seat, and gave me an unprofessional look I couldn't figure out.

"You don't like doctors," he said flatly. Before I could think of an answer, he went on. "I don't exactly

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

blame you. I've seen some real idiots, even in industrial medicine. Maybe particularly in industrial medicine. I knew a guy one time who insisted that all emergency gear be locked up so that the employees couldn't misuse it—had to threaten to call in OSHA to change his mind. And with your friend's problem—''

''I don't—''

''Just a minute,'' he said, and I glared at the interruption. ''What I wanted to say was that I do respect your professional standing and knowledge. If I didn't when I got here, I do now. I want you to know that. You made a mistake today—so have I, plenty of times. But on top of that—'' He looked around the room, and then back to me. ''I wish you'd quit hating doctors quite so much . . . it makes it hard to ask you out.''

''Out?'' My jaw must have dropped. That idea was so old-fashioned—and on the Station, where there was no place to go, in that sense—that I almost laughed. He was grinning again.

''Yeah, well—we're not the oldest, or second-oldest profession, but we're old and stodgy enough. Thing is, you're smart, and I like talking to you, but I don't like the feeling that you hate the guts you won't admit I have.''

''Oh—you have.'' I'd admit that much. ''But I don't mess with doctors. It doesn't work.''

''Look, I'm not declaring undying romantic whatevers. Just interest. I'd like to talk about things, and—'' He paused. I waited. ''Besides, have you heard what your friend down there has thought up?'' He nodded toward the planet outside.

''Dave? What?''

Mossler leaned back. ''In free fall, how much do you use your legs in your work?''

''Well—I don't.'' That was obvious. Nothing hit me for a long moment. Then, ''You don't mean—Dave wants to come *here?* Onto the Station?''

He nodded. ''You told me Dave had filed an application when you first did—before he fell for this girl.'' I nodded. ''Well, he's reactivated it. They were about to squash it, automatically, but Timmy—that's Dr. Hargrave in medical clearance, he's an old friend of mine—told me about it. As a joke, I'm sorry to say.'' I could feel my face stiffen. ''Yeah—I feel that way, too. I have a cousin who's a quadriplegic, a lawyer, and she can't get work. Finally started doing legal research at home with a computer and modem, and just doesn't tell clients about her injury. She's got a lightbeam device she uses. Anyway—''

I nodded, thinking hard. Dave hadn't written me yet, and I hadn't heard about his application.

''I don't know if I can make any difference,'' Mossler went on. ''I had a few words with Timmy; he's willing to consider it, if everything else checks out. Maybe. I don't know how your friend—Dave—will work out if he gets here. With the job, or with you, either. But two things, Pat: I'm not here to cause you trouble, and I'm not helping your friend to get a line in with you. If he's good enough—and if he can manage the work—I'd like to see him up here. Low and zero-gravity environments should give a lot of people a chance they wouldn't get down there.''

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"But he couldn't—he's helpless—" Tears stung my eyes again, thinking of the Dave who had started me in rock work, the hard, muscled legs I'd followed up one cliff after another.

Mossler exploded as if I'd hit him. "He is not *helpless!* Dammit, Pat, you ought to have more sense than that! You were his partner; he's depending on you to back him—"

"But he can't move—"

"His legs. His legs—that's what he can't move. Helpless! I'd thought you knew more—! He's got everything he ever had except controlled movement from the waist down, and you just said you don't use your legs in zero-g." He took a long breath, still glaring at me. "Pat, if you think he's helpless—if you treat him like he's helpless—he can't do it. He wants to try something that's never been done, and he's got to have someone—someone he trusts—who will trust him, believe in him. And that's you. If you're going to hold that surgeon, whatever-her-name-was, over his head—"

"No!" Now I was angry too. "It's not that—"

"Good. I don't know this man—you do. I've got to depend on your judgment of him, in part. You told me about your work together, and he sounded like exactly what we need to replace those who don't return. I know his exam scores, and all that, and he's got plenty of guts or he wouldn't be trying this. But it won't be easy, no matter how good, or how tough, or how determined he is. You haven't worked around rehab; I have. He has to have the respect of someone he trusts and knows—respect, not pity. If he comes up here, you're the only one he'll know. You can't duck it, Pat. If you insist on seeing him as ruined and crippled and helpless, then he'll be useless to us and himself."

I chewed that over. The back of my mind insisted that crippled is crippled, and all the fancy speeches in the world can't change that. Wheelchair races, wheelchair basketball, 'plegics swimming and doing gymnastics—that's all shiny paper and bright ribbon wrapping up the same hopeless package. A few people wheeling around in and out of office buildings doesn't make that much difference. My job, as a paramedic, was to prevent crippling complications to injuries. After that it was someone else's problem.

But now it was Dave's problem. We had never been lovers, no, but we had been partners. We had depended on each other. I had depended on him, when I applied to work on the Station, too. And he had stayed behind. I didn't like the anger that still flickered when I thought of that. Had it been a betrayal? Had I had a right to expect him to leave Sally and come here? More immediately, could I give him the support Mossler said he needed? I found myself shrugging mentally; I couldn't do anything else. If it had happened while we were still partners, I'd have done what I could, and the same applied.

"I'll try," I said, looking up. His face relaxed. "I—I know we spent a shift or so in rehab, when we were in training. I hated it. It seemed so—"

"Hopeless?" When I nodded, he went on. "Yeah, if you only see it for that short time, it does. But my cousin, Gina—I saw what she learned to do, and how she makes it. She needs help,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

but she can give help, too, with what she's got left. She's not the only one. If we can get people like that up here, give them a chance—"

"But what if it doesn't work?"

"What if anything doesn't work—we try something else. Good grief, Pat, you're the one who thought of making a spacesuit with a screw-on arm—and if that's not a crazy idea I don't know what is."

I found myself grinning. "I'm sure you'll think of something."

"And I'd still like to eat dinner with you sometime," he said.

"I'm not looking for—"

"A lover. Fine. But someone to eat with? Until he gets here?"

I had to laugh. "All right."

The new suits are made with an improved, screw-on elbow joint that's supposed to be immune to collapse. Up here we converted what we had in less than a month. It's amazing how many of those construction workers could do it themselves. Mossler and Jeff Sevier hold a joint patent on the "can-opener"; Mossler promised Fairley his first patent bonus check for his grandmother's wit. And our recent record on EVA trauma shows that we're doing almost as well, injury for injury, as downside services.

In two months I'll be on leave, downside and talking to Dave. He's determined, and the rest of the gang up here agrees it's worth a try. It's the only place he might be able to work as a paramedic. He hasn't said a word about Sally in his notes, and I haven't asked.

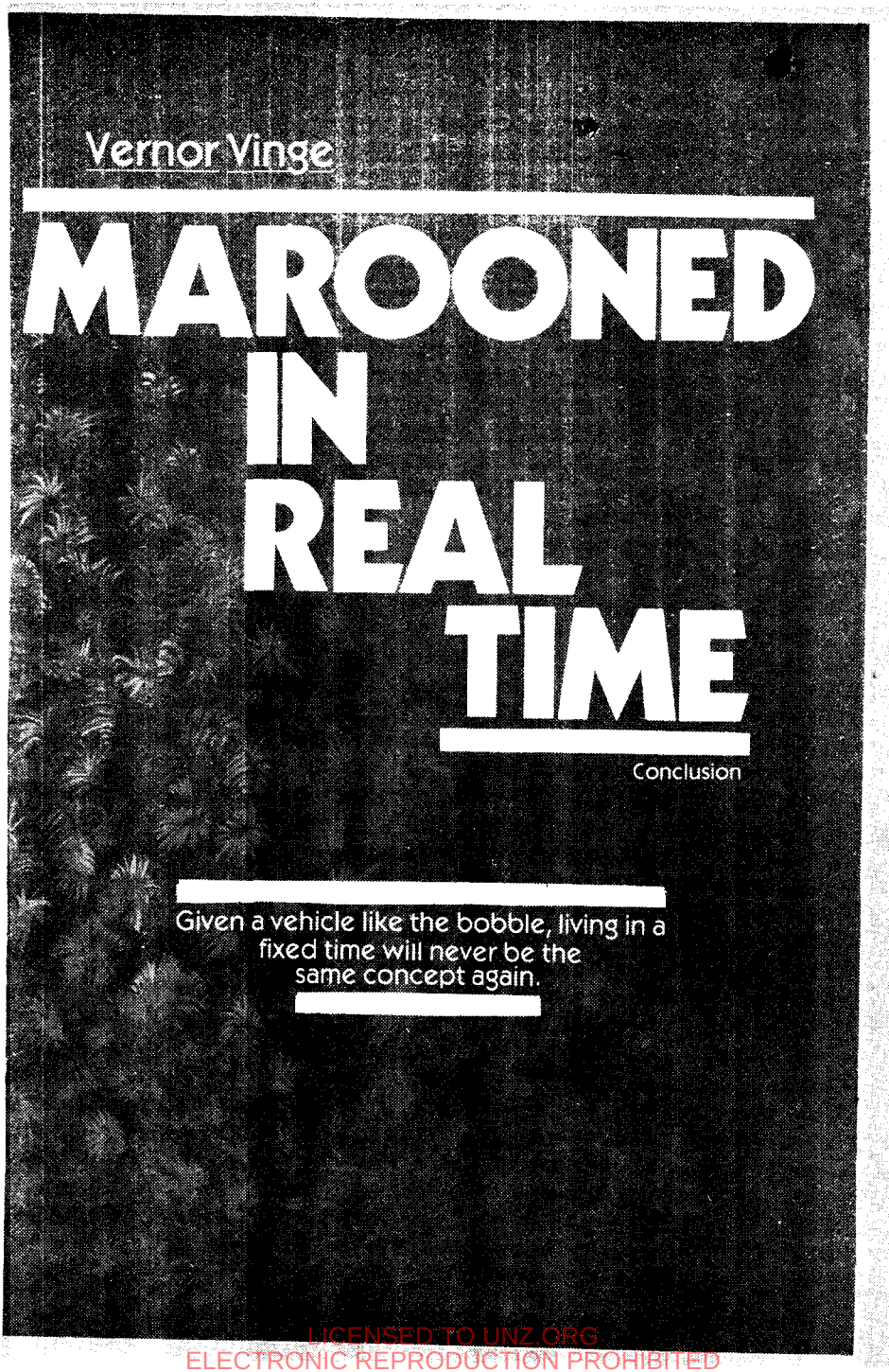
Mossler? Well, he's a nice enough guy, but his real extra-curricular interest is pre-Baroque music. He used to sing with a choir in college, and so on and so on. We're good co-workers, as far as emergency medicine is concerned, but I don't care if I never hear another word about early church music. Or another tape, either. ■

●Is the procession of night and day, the movement of our earth and planets around the warming sun, something really special, or are there other similar systems? More than a million stars in the Milky Way possess planets on which you might live without undue discomfort. And you looked out on the Milky Way, one of the comparatively insignificant stars you would see would be the sun. But, even with a powerful telescope, you would not see the earth or any of the planets of the sun's system.

Fred Hoyle

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED


Vernor Vinge
MAROONED IN REAL TIME
Conclusion
Given a vehicle like the bobble, living in a fixed time will never be the same concept again.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

SYNOPSIS

It seems unlikely the human race will exist a million years from now. No reasonable person would expect the race to survive fifty *million years. In that time, mountains grow old; continents split and merge. Even without war or natural catastrophe, a form such as Man should become extinct, or evolve into something different.*

Before January 2100, **Wil Brierson** *would have considered such questions a pleasant waste of time. Brierson was a private policeman—in an era when no other kind of cop existed. He had handled all types of crime, from fraud to armed invasion. His current case, an embezzlement, was comparatively trivial. But Wil got careless, and his quarry trapped him in a* **bobble.**

Inside a bobble, time is stopped. No force can affect a bobble's contents; no force can change a bobble's duration. Brierson's stasis would last 100,000 years. When next he lived, the fate of humankind would be a deadly, immediate issue.

Marta *and* **Yelén Korolev** *entered stasis in 2201. Their departure was voluntary. They took state-of-the-art survival equipment—and by 2201, that was very good indeed. Ultimately, they expected to penetrate beyond the end of civilization.*

In that they succeeded. Easily. They discovered that the human race was not to last fifty million years, or one million, or even one hundred. *Somewhere in the twenty-third century, the human race had . . . disappeared. By the fourth millennium, Earth was a decaying mausoleum, Man's works vanishing beneath jungle and forest and sea.*

Marta and Yelén found other exiles. Some were self-sufficient, coming from the high-tech era around 2200. **Monica Raines** *thought war or pollution had killed mankind off—and good riddance.* **Juan Chanson,** *trained as an archeologist, saw strong evidence of warfare—and equally strong evidence that the attacks had come from outside the solar system. He concluded that the human race had been murdered.*

When civilization ended, there were thousands of bobbles containing humans. Most held low-techs, people from the twenty-first and early twenty-second centuries. Their arrival times were scattered across the future. One of the largest groups, members of the infamous **Peace Authority** *from 2048, would not return for fifty million years.*

Marta Korolev had a plan. If all those in stasis could be saved, there might be enough humans left to restart the race.

Fifty megayears was the grand target date, when all still alive and interested would meet, the Peacers be rescued, and humankind start again. Along the way, more high-tech travelers surfaced, including: **Philippe Genet, Tunç Blumenthal, Jason Mudge,** *and* **the Robinson Family.** *In the final centuries before the rescue, a space explorer returned to the solar system.* **Della Lu** *had been gone fifty million years. In appearance and behavior, she seemed scarcely human; the others guessed she had lived thousands of years in real time.*

The rendezvous was as carefully planned as any twentieth century space mission: Marta and Yelén had arranged

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

that all previously rescued low-techs return to real time simultaneously, and had built Town Korolev to house them. The retrieval of the Peacer bobble from deep within Earth's crust was witnessed by all. Once on the surface, it would be another few thousand years before it finally burst, but now its contents would survive the return to real time. The rest of the colony would bobble up one last time, to await the Peacers' arrival.

The Korolev plan was a technical triumph, but the next few days brought it close to ruin. The Robinson Family held a party. Playing on the low-tech hostility against the Korolevs, **Don Robinson** *began recruiting low-techs for* his *version of a new order.*

That night the colony bobbled forward, awaiting the final return of the Peacers. That "night," more than one hundred years passed in real time. That "night," someone murdered Marta Korolev. Through a subtle sabotage of the bobble management programs, Marta was left outside of stasis. She had no equipment, no health care. She lived four decades . . . and died years before anyone could save her.

Yelén Korolev hated Wil Brierson, thinking he had made advances on Marta the night of the bobbling. Nevertheless, she needed him now. Even fifty million years after the Age of Man, there was still work for a cop. His partner was to be the high-tech spacer, Della Lu.

There were suspects: The Robinson Family raced off to interstellar space, proclaiming their innocence but leaving only one daughter, **Tammy Robinson,** *to face the investigation.*

Juan Chanson spoke secretly with Wil, claiming that Marta's murder was connected with his theories about the **Extinction** *(what some called the* **Singularity***) that had ended the Age of Man. Juan believed that mankind had been exterminated—and that at least one of the exterminators still existed. "Della Lu seems inhuman because she* is *inhuman," said Chanson.*

The accusation had a terrible consistency. For fifty million years, no one had seen Della Lu. The person claiming her identity seemed more believable with every passing day, yet Wil remembered her original appearance. And Wil knew that her records of civilization were strangely jumbled. Lu claimed to have spent the megayears searching for intelligent life beyond the solar system. She claimed to have lived nine thousand years, visiting tens of thousands of planets scattered across three galaxies. Her great age and the battle with a centaur-like alien that capped her search's only success were supposedly the explanation for her weird personality and damaged memories.

Marta Korolev had been the brains behind the settlement plan. Without her, Yelén was in desperate trouble. The remnants of the **Republic of New Mexico** *and the Peace Authority were the two largest groups of low-techs. Both were determined to run the show. If not for Yelén, the two would likely have ended up in a shooting war. Instead they warred verbally, and worked to dominate the* **ungoverned** *low-techs. Yelén could see what was happening, but couldn't see how to stop it; she had been born in 2161, decades after the last government had foundered.*

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Thus Brierson found himself with an additional assignment: Attend the governments' recruiting parties and interpret the low-techs' motives to Yelén. The results were surprising and unpleasant. **Kim Tioulang,** *the head Peacer, approached Brierson. He was too frightened to say much, but implied that an unnamed high-tech was meddling with the governments. Phil Genet was more specific: he had solid evidence that some high-tech was backing the Republic of New Mexico and its president,* **Steven Fraley.**

More than ever, it was obvious that solving the murder and saving the settlement were equivalent projects.

Marta Korolev had written millions of words during the last four decades of her life. She had much to write about; in the megayears since the Singularity, life had taken many new forms. Some were small and deadly: Marta nearly lost her foot to a type of explosive beetle. Some were vast: Jacaranda forests spread across much of the Asian tropics, empty but for the symbiotic presence of social spiders. Some were her only friends: Fishermonkeys thrived at Peacer Lake, where Marta finally settled.

Marta knew she was a victim, and speculated on who might have marooned her. Yet the only thing Wil had discovered from her diary was that here was someone he could have loved, but who was now fifty thousand years dead. Then, on a whim, he looked at all the references to himself. Marta claimed that on the night of the Robinson party, Wil had tried to force himself on her. That was a lie, *but one that only he could recognize.*

Handled properly, this clue could break the case. Somehow the murderer had lurked in real time, watching Marta. Somehow Marta had guessed this—and had spent the rest of her life playing a double game with the diary, leaving clues that only Wil could see. And that meant that either the murderer was deeply into the Korolev computer system—or was Yelén Korolev herself.

Wil confronted Della and Yelén with his conclusions, and the assertion that he knew the location of a secret diary cairn, in which Marta named the murderer.

One way or another, the killer now knew that Brierson would soon break the case. Yet Wil refused to give any details; instead, he demanded increased protection, and help in retrieving the hidden cairn for himself. Della Lu guessed Wil was up to something. When they were in private, she said, "You know, Wil, once upon a time I was a government cop. I think I was pretty good at power games. So. Advice from an old pro: Don't get in over your head."

After Della signed off, Wil went into the kitchen. He started to mix himself a drink, realized he had no business drinking just now, and scarfed some cake instead. *Under all this pressure, it's just one bad habit or another,* he told himself. He wandered back into the living room, and looked out. In his era, letting a protected witness parade in front of a window would be insanity. It didn't matter much here, with the weapons and countermeasures the high-techs had.

The afternoon was clear, dry. He could hear dry rustling in the trees. Only

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

a short stretch of road was visible. All the branches and greenery didn't leave much in sight. The only nice views were from the second floor. Still, he was getting fond of the place. It was a bit like the lower class digs he and Virginia had started in.

He leaned out the window, looked straight up. The two autons were floating lower than usual. Farther up, almost lost in the haze, was something *big*. He tried to imagine the forces that must be piled up in the first few hundred klicks above him. He knew the firepower Della and Yelén admitted to. It far exceeded the combined might of all the nations in history; it was probably greater than that of any police service up to the mid-twenty-second. All that force was poised for the protection of one house, one man . . . more precisely, the information in one man's head. All things considered, it wasn't something he took much comfort in.

Wil reviewed the scenarios once more; what could happen in the next twenty-four hours? It would all be over by then, most likely. He was barely conscious of pacing into the kitchen, through the pantry, the laundry, the guest room, and back into the living room. He looked out the window, then repeated the traversal in reverse order. It was a habit that had not been popular with Virginia and the kids: When he was really into a case, he would wander all through the house, cogitating. Ninety kilos of semiconscious cop lumbering down halls and through doorways was a definite safety hazard. They had threatened to hang a cow bell around his neck.

Something brought Brierson out of the depths. He looked around the laundry, trying to identify the strangeness. Then he realized: He'd been humming, and there was a silly grin on his face. He was back in his element. This was the biggest, most dangerous case of his life. But it was a *case*. And he finally had a handle on it. For the first time since he was shanghaied, the doubts and dangers were ones he could deal with professionally. His smile widened. Back in the living room, he grabbed his data set and sat down. Just in case they were listening, he should pretend to do some research.

22

Yelén was back late that evening. "Kim Tioulang is dead."

Wil's head snapped up. *Is* this *how it begins?* "When? How?"

"Less than ten minutes ago. Three bullets in the head. . . . I'm sending you the details."

"Any evidence who—"

She grimaced, but by now she accepted that what she sent was not immediately part of his memory. "Nothing definite. My security at North Shore has been thin since we switched things around this afternoon. He sneaked out of the Peacer base; not even his own people noticed. It looks like he was trying to board a transSea shuttle." The only place that would take him was Town Korolev. "There are no witnesses. In fact, I suspect that no one was on the ground where he was shot. The slugs were dumb exploders, New Mexico five millimeters." Normally those were pistol-fired, with a max accurate range of thirty meters; who did the killer think he was fooling? "The coincidence is too much to ignore,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Brierson. You're right; the enemy must have bugs in my system."

"Yeah." For a second he wasn't listening. He was remembering the North Shore picnic, the withered little man that had been Kim Tioulang. He was as tough as anyone Wil ever met, but his wistfulness about the future had seemed real. The most ancient man in the world . . . and now he was dead. Why? What had he been trying to tell them? He looked up at Yelén. "Since this afternoon, have you noticed anything special with the Peacers? Any evidence of high-tech interference?"

"No. As I said, I can't watch as closely as before. I talked to Phil Genet about it. He hasn't noticed anything with the Peacers, but he says NM radio traffic has changed during the last few hours. I'm looking into that." She paused. For the first time, he saw fear in her face. "These next few hours we could lose it all, Wil. Everything Marta ever hoped for."

"Yes. Or we could nail the enemy cold, and *save* her plan. . . . How are things set for tomorrow?"

His question brought back the normal Yelén. "This delay cost us the advantage of surprise, but it also means we're better prepared. Della has an incredible amount of equipment. I knew her expedition to the Dark Companion made money, but I never imagined she could afford all this. Almost all of it will be in position by tomorrow. She'll land by your place at sunup. It's all your show then."

"You're not coming?"

"No. In fact, I'm out of your inner security zone. My equipment will handle peripheral issues, but . . . Della and I talked it over. If I—my system—is deeply perverted, the enemy could turn it on you."

"Hmm." He'd been counting on the dual protection; if he'd guessed wrong about one of them, the other would still be there. But if Yelén herself thought she might lose control. . . . "Okay. Della seemed in pretty good form this afternoon."

"Yes. I have a theory that under stress the appropriate personality comes to the surface. She's driftiest after she's been by herself for a while. I'm talking to her right now, and she seems okay. With any luck, she'll still be wearing her cop personality tomorrow."

After Yelén signed off, Wil looked at the stuff she was sending over. It grew much faster than he could read it, and there were new developments all the time. Genet was right about the NMs. They were using a new encryption scheme, one that Yelén couldn't break. That in itself was more of an anachronism than polka-dot paint or anti-grav volley balls. Under other circumstances, she would have raided them for it, and diplomacy be damned. . . . Now, she was stretched so thin that all she could do was watch.

Tioulang's murder. The high-tech manipulation of Fraley. There was some fundamental aspect of the killer's motivation that Wil didn't understand. If he wanted to destroy the colony, he could have done that long ago. So Wil had concluded that the enemy wanted to rule. Now he wondered. Was the low-techs' survival simply a bargaining chip to the killer?

It was a long night.

* * *

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Brierson was standing by his window when Della's flier came down. It was still twilight at ground level, but he could see sunlight on the treetops. He grabbed his data set and walked out of the house. His step was brisk, adrenaline-fueled.

"Wait Wil!" The Dasguptas were on their front porch. He stopped, and they ran down the street toward him. He hoped his guardians weren't trigger happy.

"Did you know?" Rohan began, and his brother continued, "The Peacer boss was murdered last night. It looks like the NMs did it."

"Where did you hear?" He couldn't imagine Yelén spreading the news.

"The Peacer news service. Is it true, Wil?"

Brierson nodded. "We don't know who did it, though."

"Damn!" Dilip was as upset as Wil had ever seen him. "After all the talk about peaceful competition, I thought the NMs and Peacers had changed their ways. If they start playing power games, the rest of us are. . . . Look, Wil, back in civilization this couldn't happen. They'd have every police service in Asia down on them. Can, can we count on Yelén to keep these guys out of our way?"

Wil knew that Yelén would die before she'd let the NMs and Peacers fight. But today, dying might not be enough. The Dasguptas saw the tip of a game that extended beyond their knowing—and Wil's. He looked at the brothers, saw unmerited trust in their faces. What could he do? . . . Maybe the truth would help. "We think this is tied up with Marta's murder, Dilip." He jerked a thumb at Della's flier. "That's what I'm checking out now. If there's shooting, I'll bet you see more than low-techs involved. Look, I'll get Yelén to lower her suppressor fields; you could bobble up for the next couple of days."

"Our equipment, too."

"Right. In any case, get people spread out and under cover." There was nothing more he could say, and the brothers seemed to know it.

"Okay, Wil," Rohan said quietly. "Luck to us all."

Della's flier was somewhat bigger than usual, and there were five pods strapped around its midsection.

But the crew area didn't have the feel of a combat vehicle. It wasn't the lack of control and display panels: when Wil left civilization, those were vanishing items. Even the older models had provided command helmets that allowed the pilot to see the outside world in terms of what was important to the mission. The newer ones didn't need the helmets; the windows themselves were holo panels on artificial reality. But there were no command helmets in Della's flier, and the windows showed the same version of reality that clear glass would. The floor was carpeted. Unwindowed sections of the wall were decorated with Della's strange watercolors.

As he climbed aboard, Wil gestured at the strap-on pods. "Extra guns?"

"No. Those are defensive. There's a tonne of matter/anti-matter in each one."

"Ug." He sat down and strapped in. Defensive—like a flak jacket made of plastique?

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Lu pulled more than two g's getting them off the street; no simple elevator rides today. Half a minute passed, and she cut the drive. Up and up and up they fell, Wil's stomach protesting all the way. They topped out around ten thousand meters, where she resumed one g.

It was a beautiful day. The low sun angle put the forested highlands into jagged relief. He couldn't see much of Town Korolev, but Yelén's castle was a shadowed pattern of gold and green. Northward, clouds hid the lowlands and the Sea. To the south, the mountains rose gray above the timber line to snow-topped peaks. The Indonesian Alps were the Rockies writ large.

Lu's eyes were open, but unfocused. "Just want to have some maneuvering room." Then she looked at Wil, and smiled. "Where to, Boss?"

"Della, did you hear what I told the Dasguptas? Yelén should turn off her suppressors. Maybe a few low-techs will bobble out of this era, but she can't just leave everyone exposed."

"Wil, haven't you been reading your mail?"

"Unh, most of it." All night long it had been coming in, faster than he could keep up. He'd read all the red-tag stuff, until falling asleep an hour before dawn.

"We don't know the reason, but it's clear now the enemy may try to kill lots of low-techs. For the last sixty minutes, Yelén's been trying to remove bobble suppression from Australasia. She can't do it."

"Why not? It's her own equipment!" Wil felt stupid the moment he spoke.

"Yes. You could scarcely ask for better proof that her system is perverted, could you?" Her smiled widened.

"If she can't turn them off, can you just blow them up?"

"We may decide to try that. But we don't know exactly how her defenses might respond. Besides, the enemy may have his own suppressor system ready to come on the moment Yelén's drops out."

"So no one can bobble up."

"It's a large-volume, low-intensity field, good enough to suppress any low-tech generators. But my bobblers can still self enclose; my best still have some range."

For a moment, the purpose of this trip was forgotten. There must be some way to protect low-techs. Evacuate them from the suppression zone? That maneuver might put them in even more danger. Fly in high power bobblers? He abruptly realized that the high-techs must be giving much deeper thought than he could to the problem. The problem he had precipitated. *Face it.* The only way he could contribute now was by succeeding with his mission: to identify the killer. Della's original question was the one he should be answering. *Where to?* "Are we certified free of eavesdroppers?" Lu nodded. "Okay. We start from Peacer Lake."

The flier boosted across the Inland Sea. But Della was not satisfied with the directions. "You don't know the cairn's coordinates?"

"I know what I'm looking for. We'll follow a search pattern."

"But searches could be done faster from orbit."

"Surely there are some sensors that need low, slow platforms?"

"Yes, but—"

"And surely we'd want to be with

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

such sensors to pick up the find immediately?"

"Ah!" She was smiling again, and did not ask him to point out the equipment he referred to.

They flew in silence for several minutes. Wil tried to see evidence of their escort. There was a flier ahead of them. To the right and left of their path, he saw two more. There was an occasional glint from beyond these, as from objects flying distant formation. It wasn't very impressive—until he wondered how far the formation extended.

"Really, Wil. No one else can listen; I'm not even recording. You can 'fess up."

Brierson looked at her questioningly, and Della continued, "It's obvious you saw something in the diary that—for all our deep analysis, and all Yelén's years with Marta—we did not. She was trying to tell us that the murderer was stalking her, and that the Korolev system had been deeply penetrated. . . . But this story about a fifth cairn," she raised an eyebrow, her expression mischievous, "is ridiculous."

Wil pretended great interest in the ground. "Why 'ridiculous'?"

"In the first place, it's unlikely the killer lived every second of those forty years in real time. But if he was so interested that Marta felt his presence, and she felt the need to write with hidden meanings—then I think it's reasonable he had sensors watching *all* the time. How could Marta sneak away from her camp, build another cairn, and get back—all without tipping him off?

"In the second place, even if she succeeded in fooling the killer, we're still talking about something that happened *fifty thousand* years ago. Do you have any conception how long that is? All recorded history wasn't much over six thousand years. And most of that's been lost. Only an incredible accident could preserve a written record across such a span."

"Yes, Yelén raised the same objection. But—"

"Right. You told her Marta had taken all that into account. I'll give you this, Wil. When you feel like it, you're one of the most convincing people I've ever seen—and I've seen some experts. . . . By the way, I backed you on this. I think Yelén is convinced; she believes Marta was all but superhuman, anyway. I wouldn't be surprised if the killer does, too.

"My point is, *I'm* on to you," Lu continued. Wil put on an expression of polite surprise. "You saw something in the diary that we didn't. But you don't know much more than what you've said—and you have no clues. Hence this wild goose chase." She waved at the lands beyond the flier. "You hope you've convinced the killer that you will know his identity in a matter of hours. You've posted us as targets, to flush him out." It was a prospect she appeared to enjoy.

And her theory was uncomfortably close to the truth. He had tried to create a situation where the enemy would be forced to attack him. What he couldn't understand was the activity around the low-techs. How could hurting *them* hide the killer?

Wil shrugged, and hoped that none of this turmoil showed on his face.

Della watched him for a second, her head cocked to one side. "No response?

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

So *I'm* still on the suspect list. If you die and I survive, then the others will be on to me—and together, they outgun me. You're trickier than I thought; maybe gutsier, too."

The morning passed, slow and tense. Della paid no attention to the view. She was rational enough—and perhaps even brighter than usual. But there was a cockiness in her manner, as if she held reality at a distance, thought it all an immensely interesting game. She was full of theories. It was no surprise that her number one suspect was Juan Chanson. "He's admitted firing on me. Juan is playing the role of racial protector. He reminds me of the centaur. I think our killer must be like that centaur, Wil. The creature was so trapped by his notion of racial duty that he killed the last survivors. We're seeing the same thing here: murders and preparations for more murders."

Wil's "search pattern" took them slowly outward from Peacer Lake. Fifty thousand years before, this had been vitrified wasteland. The jacaranda forests had won it back thousands of years since. Though this forest had not existed in Marta's time, it was much like the ones she had traveled. Wil was seeing the heaven side of the world Marta had described: To the northeast, a grayish band stretched along the border of the forest domain. That must be the kudzu web, killing the jungle and preventing invasion. On the jac side, there were occasional silver splotches, web attacks on non-jacs that had sprouted beyond the barrier. The jacarandas themselves were an endless green sea, tinged with a bluish foam of flowers. He knew there were vast webs there, too, but they were *below* the leaf canopy, where the spiders' "domesticated" caterpillars could take advantage of the leaves without shading them out.

Here and there bright puffs of cloud floated above it all, trailing shadow.

Marta had walked many kilometers before finding a display web. From this altitude, they could see several at once. None was less than thirty meters across. They shimmered in the treetop breezes, their colors shifting between red and electric blue. Somewhere down there was a fossil stream bed, the remains of a small river Marta had followed on one of her last expeditions out of Peacer Lake. He remembered what the land looked like then: kilometers of grayness, the water and wind still working to break through the glassy surface. She would have carried whatever food she needed.

Ahead, the forest was splattered with random patches of kudzu. Display webs were scattered everywhere. There was more blue and red and silver, than green.

Della supplied an explanation. "Marta's plantings spread outward from her signal line. This is where the new forest meets the old; sort of a jac civil war."

Wil smiled at the metaphor. Apparently, the two forests and their spiders were different enough to excite the kudzu reflex. He wondered if the display webs were like animal displays at territory boundaries. The colorful jumble passed slowly below, and they were over normal jacs again.

"We're way beyond Marta's farthest trip in this direction, Wil. You really

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

think anyone's going to believe we're doing a serious search here?"

He pretended to ignore the question. "Follow this line another hundred kilometers, then break and head toward the lake where she got the fishers."

Thirty minutes later they were floating above a patch of brownish green water. It was about the same size as Peacer Lake, but not so perfectly round, and not bordered by cliffs. The jacs grew right to the edge; it looked like the kudzu web stretched into the water. This was part of the ancient forest, though fifty thousand years ago there had been a ring of ordinary woodland between the jacs and the water.

"What's our defense situation, Della?"

"Cool, cool. Except for the suppressor thing, no enemy action. The NMs and Peacers have buttoned up, but they've stopped shouting accusations. We've discussed the threat with all the high-techs. They've agreed to keep out of the air for the time being, and to isolate their forces. If anyone strikes, we'll know his identity. The bottom line, Wil: I don't think the enemy has been bluffed."

There was no help for it, then. "Exactly which way is north, Della?" Damn this flier: no command helmet, no holos. He felt like the inmate of a rubber room.

Suddenly, a red arrow labeled "NORTH" hovered over the forest. It looked solid, kilometers long; so the windows were holo displays after all. "Okay. Back off eastward from the lake. Come down to a thousand meters." They slid sideways, nearly in free fall. Most of the lake was still visible. "Give me a ring around the lake. Mark it off in degrees." He studied the lake and the blue circle that now surrounded it. "I want to get into the forest about ten klicks from the lake on a bearing thirty degrees from north." They were close enough to the forest canopy that he could see leaves and flowers rushing by. The cover looked deep and dense. "Are you going to have any problem finding a place to get through?"

"No problem at all." Their forward motion ceased. They were just above the treetops. Abruptly, the flier smashed straight down. For an instant, negative g's hung Wil on his harness. Sounds of destruction were sharp around them.

And then they were through. The spaces beneath were dark, lit mainly by the sunlight that followed them through the hole they had punched in the canopy. Beyond that light, all was dark and greenish. Junk was drifting down all around them. Most of it was insubstantial. The underweb carried centuries of twigs and insect remains, flotsam that had not yet percolated to the surface. It was coming down all at once now, swinging back and forth through the light. Some debris—branches, clusters of flowers—was still in the air, supported by fragments of the web. More than anything else, Wil felt like they had suddenly plunged into deep water. The flier drifted out of the light. His eyes slowly adapted to the dimness.

"We're there, Wil. Now what?"

"How well can the others monitor us down here?"

"It's complicated. Depends on what we do."

"Okay. I think the cairn is southwest of us, near the bearing we took from the lake. After all this time, there won't be

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

any surface evidence, but I'm hoping you can detect the rocks." *And if you can't, I'll have to think of something else.*

"That should be easy." The flier glided around a tree. They were less than a meter up, moving at barely more than a walking pace. They drifted back and forth across the bearing; the sunlight from the entrance hole was lost behind them. Della's flier was four meters tall, and nearly that wide, yet they had no trouble negotiating the search path. He looked out the windows in wonder. Much of the ground was absolutely smooth, a gray-green down. That was the top of more than fifty thousand years' accumulation of spider dung, of leaf and chitin fragments. The abyssal ooze of the jac forest.

The forest floor was as Marta described, but much gloomier. He wondered if she had really thought it beautiful, or said so to disguise a melancholy like he felt here.

"I—I've got something, Wil!" There was real surprise on Della's face. "Strong echoes, about thirty meters ahead." As she spoke, the flier sprinted forward, dodging intermediate trees. "Most of the rocks are scattered, but there is a central cluster. It, it could really be a cairn. My lord, Wil, how could you know?"

Their flier settled on the forest floor, next to the secret that had waited fifty thousand years for them.

23

The door slid back. Wil stuck his head into the forest air. And jerked it back even more quickly. *Phew:* take mildew and add a flavoring of shit. He took another breath, and tried not to gag. Perhaps it was the abrupt transition that made it seem so awful; the flier's air was full of alpine morning.

They stepped onto the forest floor. Gray-green humus lapped around their ankles. He was careful not to kick it up. There was enough junk in the air already.

Della walked a large circle tangent to their landing point. "I've mapped all the rocks. They're not as big as Marta generally used, and not as well-shaped. But backtracking their trajectories—" She was quiet for a second. "—I see they were piled in a pyramid at one time. The core is intact, and I think there's something—not rocks or forest dirt—inside. What do you want to do?"

"How long would a careful dig take—say as good as a twenty-first century archeologist could do?"

"Two or three hours."

Now that they really had something, they had to protect it—and get themselves off ground zero at the same time. "We could bobble the whole thing," he said.

"That would be awkward to haul around if shooting starts. Look, Marta never left anything of importance outside the core. That's less than a meter across in this case. We could bobble that and be out of here in just a few minutes."

Wil nodded agreement, and Della continued with scarcely a pause, "Okay, it's done. Now stand back a couple of meters."

Dozens of reflections of Wil and Della suddenly looked up from the forest floor; the ground between them was covered by close-packed bobbles.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

She walked back, around the field of mirrors. "Bobbles are hard to miss against the neutrino sky; if the enemy has decent equipment, he noticed this." Sonic booms came from beyond the tree tops. "Don't worry. That's friendly."

The new arrivals slipped through the hole Della had made in the canopy. They consisted of one auton and a cloud of robots. The robots settled on the bobbles, rooting and pushing. The top layer came off easily, revealing more bobbles beneath. These were pushed aside to get at still deeper layers. On a small scale, Lu was using the standard open pit mining technique. In minutes, they were looking into a dark, slumping hole. The bobbles were scattered on all sides, glowing copies of the forest canopy above.

One by one, the robots picked them up and flew away.

"Which one is—?"

"You can't tell, can you? I hope the enemy is similarly mystified. We've supplied him with seventy red herrings." He noticed that not all the bobbles were flown directly out. One had been transferred to the auton, and one to Della's flier.

Della climbed aboard the flier, Wil close behind. "If our friend doesn't start shooting in the next few minutes, he never will. I'm taking all the bobbles to my home. That's a million kilometers out now. From there we can see in all directions, shoot in all directions; no one can get us there." She smashed straight through the forest's roof, kept rising at multiple g's.

Wil sank deep into the acceleration couch. All he could see was sky. He squinted at the sunlight, and gasped, "He may not attack at all. He may still think we're bluffing."

She chuckled. "Don't you wish." The sky tilted, and he saw green horizon. "Twenty thousand meters. I'm going to nuke out."

Free fall. The sky was black, except at the blue horizon. They were at least one hundred kilometers up. It was like a video cut: One instant they had been at aircraft altitudes, the next they were in space. Something bright and sunlike glowed beneath them—the detonation that had boosted them out of the atmosphere. He wondered fleetingly why she hadn't nuked out from ground level. A technical reason? Or sentiment?

The sky jerked again, the horizon acquiring a distinct curve.

"Hm. I have a low-tech on the net, Wil. She wants to talk to you."

Who? "Hold off on the next nuke. Let me talk to her."

Part of one window went flat. He was looking at someone wearing NM fatigues and a display helmet. The space around the figure was crammed with twenty-first century communications gear.

"Wil!" The speaker cleared the face panel on her helmet. It was Gail Parker. "Thank God! I've been trying to break out for almost an hour. Look. Fraley has gone nuts. We're going to attack the Peacers. He says they'll wipe us if we don't. He says there's no way the high-techs can prevent it. Is that *true?* What's going on?"

Brierson sat in horrified silence. What was the killer's motive, that he would contrive such a war? "Part of it *is* true, Gail. It looks like someone's trying to wipe the entire colony. This war talk

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

must be part of it. Is there anything you can do to—''

''*Me?*'' She glanced over her shoulder, then continued in a lower voice. ''God damn it, Wil, I'm at the center of our C&C. Sure. I could sabotage our entire defense system. But if the other side really does attack, then I've murdered my own people!''

''None of us will make it otherwise, Gail. I'll try to talk sense to the Peacers. Do . . . do what you can.'' *What would I do in her place?* His mind shied away from Gail's choices.

Parker nodded. ''I—'' The picture smeared into an abstract pattern of colors. A screeching noise rose past audibility.

''Signal jammed,'' said Lu.

''Della? Can you get through to the Peacers?''

Lu shrugged. ''It doesn't matter. Why do you think Parker called just then? She thinks she finally broke out of NM security. In fact, the enemy has taken over their system. Letting her through is part of a distraction.''

''*Distraction?*''

''One we can't ignore; he's going to start 'em killing each other. I see ballistic traffic going both ways across the Inland Sea. . . . Someone's blocking my wideband link to Yelén.''

A section of window suddenly showed Yelén's office. Korolev was standing. ''Both sides are shooting. I've lost several autons. *Both* sides have high-tech backing, Della.'' Disbelief was mixed with rage and fear. Tears glinted on her face. ''You'll have to do without my help for now; I'm going to divert my forces. I can't let my peo—I can't let these people die.''

''It's okay, Yelén. But get the others to help you. You can't trust your system alone.''

Korolev sat down shakily. ''Right. They've agreed to bring their forces up. I'm starting my diversion now.'' There was a moment of silence. Yelén stared blankly, swapped out. The silence stretched . . . and Yelén's eyes slowly widened. In horror. ''Oh, my God, no!'' Her image vanished, and he was looking into empty sky.

Wil flinched, the motion floating him against his restraint harness. ''More jamming?''

''No. She just stopped transmitting.'' There was a faint smile on Della's face. ''I guessed this might happen. To shift her forces, she had to run control routines that the enemy could not start—but which he had perverted. He's finally shown himself in a big way: Yelén's forces are coming out for us. What she has in far space is moving to block our exit.

''Another minute and we'll know who we've been fighting all this time. Yelén can't take me alone. The killer is going to have to stand up with his own equipment—'' Her smile broadened. ''You're going to see some real shooting, Wil.''

''I can hardly wait.'' He tucked his data set in the side of his acc chair.

''Oh, don't expect too much; with the naked eye, this won't be very spectacular.'' And she was humming!

Please God, that this insanity not affect her performance.

The horizon jerked once again. There was no acceleration, no sound. It was like botched special effects from an old-time movie. But now they were better

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

than a thousand kilometers up, the Inland Sea a cloud-dotted puddle. And the Earth was visibly falling away from them; they were moving at dozens of klicks per second.

Surely—even without Yelén—the others could protect the low-techs from a few ballistic missiles? Malicious fate gave him quick answer: Three bright sparks glowed on the southern coast, a third of the way from West End to the Eastern Straits. Wil groaned.

"Those were high air bursts, at Town Korolev," said Della. "If the Dasguptas spread your warning, there may not be too many casualties." There was puzzlement in her voice.

"But where are Chanson and Genet and Blumenthal? Surely—"

"Surely they could prevent this?" Della finished the question. She swapped out a moment. Then: *"Oh . . . wow!"* Her words were almost a sigh, filled with endless wonder and surprise. She was silent a moment more. Then her eyes focused on Wil. "All this time, we were expecting to flush the killer into the open. Right? Well . . . we have a little problem. *All* the high-tech forces have turned on us."

Like a gruesome story Wil once read: Detective locks self in room with suspects. Detective applies definitive test to suspects. All suspects guilty . . . unmarked grave for detective. Happy ending for suspects.

"We are now outgunned, Wil. This is going to be very interesting." The smile was almost gone from her face, replaced by a look of intense concentration. Sudden light and shadow flickered across the cabin. Wil looked up, saw a pattern of point lights glowing, fading in the blackness. "They have a lot of stuff at the Lagrange zones. They're bringing it down on us—while their ground based stuff comes up. No way can we get to my quarters just now."

And they were back at low altitude, the horizon spread flat around them, the Indonesian Alps drifting by below. His restraint harness stiffened and the flier surged forward at multiple g's, then slammed to the side. Wil's consciousness faded into red dimness. Somewhere he heard Della say, ". . . lose real time every time I nuke out. Can't afford it now." They were in free fall for almost a second, then more crushing acceleration, then free fall again. Brightness flashed all around them, lighting sea and clouds with extra suns. More acceleration. *Things don't get this exciting when they're going right.*

The horizon jerked, and acceleration reversed. Jerk, jerk. Now each translation of the outside world was accompanied by changed acceleration, the agrav being used in concert with the nukes. Della's words came in broken gasps. "Bastards." Around them the horizon rose, kilometers per second. Acceleration was heavy, spaceward. "They're past my defenders." Jerk. They were lower, hurtling parallel to the vast wall that was the Earth. "They're zeroed on me." Jerk. "Seven direct hits in—" Jerk. Jerk.

Jerk. Free fall again. This last had taken them high over the Pacific. All was blue and ocean clouds below. "We've got about a minute's breather. I regrouped my low forces and nuked into the middle of them. The enemy's breaking through right now." To the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

west, point suns flashed brighter and brighter. In the sky below, weirdness: five contrails, a dozen. The clouds grew like quick crystal, around threads of fire. Directed energy weapons? "We're the king piece; they're trying to force us out of this era."

Somewhere, Wil found his voice. Even more, it sounded calm. "No way, Della."

"Yeah . . . I didn't come this far to fade." Pause. "Okay. There's another way to protect the king piece. A bit risky, but—"

Wil's chair suddenly came alive. The sides swung inward, bringing his arms across his middle. The footrest moved up, forcing his knees to near chest level. At the same time, the entire assembly rotated sideways, to face a similarly trussed Della Lu. The contraption tightened painfully, squeezing the two of them into a round bundle. And then

24

there was an instant of falling. The acceleration spiked, then stabilized at one g.

The chair relaxed its grip.

The sunlight was gone. The air was hot, dry. *They were no longer in the flier!* The "one-g field"—was the Earth's. They were sitting on the ground.

Della was already on her feet, dismantling part of her chair. "Nice sunset, huh?" She nodded toward the horizon.

Sunset or sunrise. He had no sense of direction, but the heat in the air made him guess they were at the end of a day. The sun was squashed and reddish, its light coming sickly across a level plain. He suddenly felt sick himself. Was that disk reddened by its closeness to the horizon, or was the sun *itself* redder? "Della, just—just how long did we jump?"

She looked up from her rummaging. "About forty-five minutes. If we can live another five, we may be okay." She pulled a meter-long pole from the back of her chair, clipped a strap to it, and slung it over her shoulder. He noticed shiny metal where the bobble had cut the chairs away from Della's flier. That bobble had been scarcely more than a meter wide. No wonder he had been cramped. "We need to get out of sight. Help me drag this stuff over there." She pointed at a knoblike hill a hundred meters off.

They were standing in a shallow crater of dirt and freshly cracked rock. Wil took a chair in each hand and pulled; he backed quickly out of the crater, onto grass. Della motioned him to stop. She grabbed one of the chairs and tipped it over. "Drag it on the smooth side. I don't want them to see a trail." She leaned back against the load, dragging it quickly across the short grass. Wil followed, pulling his with a one-handed grasp.

"When you've got a minute, I'd like to know what we're up to."

"Sure. Soon as we get these under cover." She turned, took the load on her shoulders, and all but trotted toward the stony hill. It took several minutes to reach it; the hill was larger and farther away than he thought. It rose over the grass and scrub like some ominous guardian. Except for the birds that rattled out as they approached, it seemed lifeless.

The ground around it was bare,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

grooved. The rock bulged over its base, leaving shallow caves along the perimeter. There was a smell of death. He saw bones in the shadows. Della saw them too. She slid her chair in over the bones, and waved for Wil to do the same. "I don't like this, but we've got other hunters to worry about first." Once the equipment was hidden, she scrambled up the rock face to a small cave, about four meters up. Wil followed, more awkwardly.

He look around before sitting beside her. The indentation barely qualified as a cave. Nothing would surprise them from behind, though something had used it for dining; there were more well-gnawed bones. The cave was hidden from most of the sky, yet they had a good view of the ground, almost to the base of the rock.

He sat down, impatient for explanations—and suddenly was struck by the silence. All day the tension had grown, reaching a crescendo of violence these last few minutes. Now every sign of that struggle was gone. One hundred meters away, birds flocked around a stunted tree, their cries and flapping wings clear and tiny in the larger silence. Only a sliver of the sun's disk still glowed at the horizon. By that light, the prairie was reddish gold, broken here and there by the dark scrub. The breeze was a slow thing, still warm from the day. It brought perfume and putrescence, and left the sweat dry on his face.

He looked at Della Lu. Dark hair had fallen across her cheek. She didn't seem to notice. "Della?" he said quietly. "Did we lose?"

"Unh?" She looked at him, awareness coming back to her eyes. "Not yet. Maybe not at all if this works. . . . They were concentrating everything on you and me. The only way we could stay in this era and still survive was to disappear. I brought my whole inner guard toward our flier. We exploded almost all our nukes at the same time, and vanished as thousands of meter-sized bobbles. One of those bobbles contained you and me: seventy of them are from the cairn. They're scattered all over now—Earth surface, Earth orbit, solar orbit. Most of the surface ones were timed to burst minutes after impact."

"So we're lost in the turmoil."

Her smile was a ghost of earlier enthusiasm. "Right. They haven't got us yet: I think we brought it off. Given a few hours they could do a thorough search, but I'm not giving them the time. My mid guard has come down, and is giving them plenty of other things to worry about.

"We, here, are totally defenseless, Wil. I don't even have a bobbler. The other side could take us out with a 5mm pistol—if only they knew where to do the shooting. I had to destroy my inner guard to get away. What's left is outnumbered two to one. Yet . . . yet, I think I can win. Fifty seconds out of every minute, I have tight beam comm with my fleet." She patted the meter-long pole that lay on the ground between them. One end consisted of a ten centimeter sphere. She had laid the pole so that the ball was at the cave's entrance. Wil looked at it more closely, saw iridescence glow and waver. It was some kind of coherent transmitter. Her own forces knew where they were hidden, and needed to keep only one unit in line of sight for Lu to run the battle.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Della's voice was distant, almost indifferent. "Whoever they are, they know how to pervert systems, but they don't know so much about combat. I've fought through centuries of real time, with bobblers and suppressors, nukes and lasers. I have programs you just couldn't buy in civilization. Even without me, my system fights smarter than the other side's—" A chuckle. "The high orbit stuff is dead just now. We're playing 'peek-and-shoot': 'peek' around the shoulder of the Earth, 'shoot' at anything with its head stuck up. Boys and girls running round and round their home, killing each other. . . . I'm winning, Wil, I really am. But we're burning it all. Poor Yelén. So worried that our systems might not last long enough to re-establish civilization. One afternoon we're destroying all we've accumulated."

"What about the low-techs?" Was there anybody left to fight for?

"Their little play-war?" She was silent for fifteen seconds, and when she spoke again seemed even further away. "That ended as soon as it had served the enemy's purpose." Perhaps only Town Korolev had been wiped. Della sat against the rear wall of the cave. Now she leaned her head back and closed her eyes.

Wil studied her face. How different she looked from the creature he had seen on the beach. And when she wasn't talking, there were no weird perspectives, no shifting of personalities. Her face was young and innocent, straight black hair still fallen across her cheek. She might have been asleep, occasional dreams twitching her lips and eyelids. Wil reached to brush the hair back from her face—and stopped. The mind in this body was looking far across space, looking down on Earth from all directions, was commanding one side in the largest battle Wil had ever known. Best to let sleeping generals lie.

He crawled along the side of the cave, to the entrance. From here he could see the plains and part of the sky, yet was better hidden than Della.

He looked across the land. If there was any way he could help, it was by protecting Della from local varmints. A few of the birds had returned to the rock. They were the only animal life visible; maybe these bone-littered condos were abandoned property. Surely Della had brought handguns and first-aid gear. He eyed the smooth shells of the acceleration chairs and wondered if he should ask her about them. But Della was in deep connect; even during the first attack she had not been concentrating like this. . . . Better to wait till he had a certifiable emergency. For now he would watch and listen.

Twilight slowly faded; a quarter moon slid down the western sky. From the track of the sun's setting, he guessed they were in the northern hemisphere, away from the tropics. This must be Calafia or the savannah that faced that island on the west coast of North America. Somehow, being oriented made Wil feel better.

The birds had quieted. There was a buzzing he hoped was insects. It was getting hard to keep his eyes on the ground. With the coming of night, the sky show was impossible to ignore. Aurora stretched from north horizon to south. The pale curtains were as bright as any he had seen, even from Alaska.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The battle itself danced slowly beyond those curtains. Some of the lights were close-set sparkles, like a gem visible only when its facets caught some magic light. The lights brightened and dimmed, but the cluster as a whole didn't move: that must be a high-orbit fight, perhaps at a Lagrange zone. For half an hour at a time, that was the only action visible. Then a fragment of the near-Earth battle would come above the horizon—the "peek and shoot" crowd. Those lights cast vivid shadows, each one starting brilliant white, fading to red over five or ten seconds.

Though he had no idea who was winning, Wil thought he could follow some of the action. A near-Earth firefight would start with ten or twenty detonations across a large part of the sky. These were followed by more nukes in a smaller and smaller space, presumably fighting past robots toward a central auton. Even the laser blasts were visible now, threads of light coruscating bright or faint depending on how much junk was in the way. Their paths pointed into the contracting net of detonations. Sometimes the net shrank to nothing, the enemy destroyed or in long-term stasis. Other times, there was a bright flash from the center, or a string of flashes heading outward. Escape attempts? In any case, the battle would then cease, or shift many degrees across the sky. Aurora flared in moon-bright knots on the deserted battlefield.

Even moving hundreds of kilometers per second, it took time for the fighters to cross the sky, time for the nuke blasts to fade through red to auroral memories. It was like fireworks, photographed in slow motion.

The land around them was empty but for moving shadows, silent but for the insect buzz and occasional uneasy squawking. Only once did he hear anything caused by the battle: three threads of directed energy laced across the sky from some fight over the horizon. The shots were very low, actually in the atmosphere. Even as they faded, contrails grew around them. After a minute, Wil heard faint thunder.

An hour passed, then two. Della had not said a word. To him, anyway. Light chased back and forth within the ball of her communications scepter, interference fringes shifting as she resighted the link.

Something started yowling. Wil's eyes swept the plain. Just now his only light was from the aurora: there was no near-Earth firefight going, and the high-orbit action was a dim flickering at the western horizon. . . . Ah, there they were! Gray shapes, a couple of hundred meters out. They were loud for their size—or hunkered close to the ground. The yowling spread, was traded back and forth. Were they fighting? admiring the light show?

. . . They were getting closer, easier to see. The creatures were almost man-sized but stayed close to the ground. They advanced in stages—trotting forward a few meters, then dropping to the ground, resuming the serenade. The pack stayed spread out, though there were pairs and trios that ran together. It all rang a very unpleasant chord in Wil's memory. He came to his knees and crawled back to Della.

Even before he reached her, she began mumbling. "Don't look out, Wil. I have them worn down . . . but they've

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

guessed we're on the surface. Last hour they've been trying to emp me out, mainly over Asia." She gave something like a chuckle. "Nothing like picking on the wrong continent. But they're shifting now. If I can't stop 'em, there'll be low altitude nukes strung across North America. Stay down, don't look out."

The yowling was even closer. When bad luck comes, it comes in bunches. Wil took Della by the shoulders, gently shook her. "Are there weapons in the acc chairs?"

Her eyes came open, dazed and wild. "Can't talk! If they emp me—"

Wil scrambled back to the cave entrance. What was she talking about? Nothing but aurora lit the sky. He looked down. She *must* have weapons stored in those chairs. Climbing down would expose him to the sky for a few seconds, but once there he could hide under the overhang and work on the chairs. The nearest of the dogthings was only eighty meters out.

Wil swung onto the rock face, and —Della screamed, a tearing, full-throated shriek of pain. Wil's universe went blinding white, and a wave of heat swept over his back, burning his hands and neck. He vaulted back into the cave, rolled to the rear wall. The only sound was the sudden keening of the dogs.

There was a second flash, a third, fourth, fifth. . . . He was curled around Della now, shielding both their faces from the cave entrance. Each flash seemed less bright; the terrible, silent footsteps marched away from them. But with each flash, Della spasmed against him, her coughs spraying wetness across his shirt.

Finally darkness returned. His scalp tingled, and Della's hair clung to his face when he leaned away from her. A tiny blue spark leaped from his fingers when he touched the wall. Lu was moaning wordlessly; each breath ended in a choked cough. He turned her on her side, made sure she wasn't swallowing her tongue. Her breathing quieted, and the spasms subsided.

"Can you hear me, Della?"

There was a long silence, filled with the mewling of the animals outside. Then her breathing roughened and she mumbled something. Wil brought his ear closer to her face. ". . . fooled 'em. They won't come sniffing around here for a while . . . but I'm cut off now . . . comm link wrecked."

Beyond the cave, the whimpering continued, but now there were sounds of movement, too. "We've got local problems, Della. Did you bring handguns?"

She squeezed his hand. "Acc chairs. Opens off my signal . . . or thumb print . . . sorry."

He eased her head to the ground and moved back to the entrance. The comm scepter didn't glow any more; the sphere end was too hot to touch. He thought about the gear Della had in her skull and shuddered. It was a miracle she still lived.

Wil looked out. The ground was well lit: The residue of the nuke attack shone overhead, a line of glowing splotches that stretched to the western horizon. Five of the dogthings lay writhing in the near distance. Most of the others had gathered in a close-packed herd. There was much whimpering, much snuffling of the ground, sniffing of the air. The

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

brightness had burned their eyes out. They drifted toward the rock, and hunkered beneath its overhang, waiting for the dark time to pass. Most of them would have a long wait.

Nine dogs paced along the edge of the herd, baying querulously. Wil could imagine their meaning, "C'mon, c'mon. What's the matter with you?" Somehow, these nine had been shaded from the sky; they could still see.

Maybe he could still get the guns. Wil picked up the comm scepter. It felt heavy, solid—if nothing else, a morningstar. He slipped over the edge of the rock, and slid to ground level.

But not unnoticed: the howling began even before he reached the ground. Three of the sighted ones loped toward him. Wil backed into the overhang that hid the chairs. Without taking his eyes off the approaching dogthings, he reached down and pulled the nearest chair into the open.

Then they were on him, the lead dog diving at his ankles. Wil swung the scepter, and met empty air as the creature twisted away. The next one came in thigh high—and caught Wil's backswing in the face. Metal crunched into bone. The creature didn't even yelp, just crashed and lay unmoving. The third one backed off, circled. Wil raised the chair on end. It was as seamless as he remembered. There were no buttons, latches. He slammed it hard against the rock face. The rock chipped; the shell was unscratched. He'd have to get it up to the cave for Della to touch.

The chair massed forty kilos, but there were good finger holds on the rock face. He could do it—if his friends stayed intimidated. He slid the scepter through the restraint harness and pulled the chair onto his shoulder. He was less than two meters up the wall when they charged.

He really should have known better; these were like the near-dogs Marta had met at the West End mines. They were big as komondors, big enough that they needn't take no for an answer. Jaws raked and grabbed at his boots. He fell on his side. This was how they liked it; Wil felt an instant of sheer terror as one of them dived for his gut. He pulled the chair across his body and the creature veered off. Wil got the next one across its neck with his scepter.

They backed off as Wil scrambled to his feet. Around the side of the rock, the blind ones growled and shouted. The cheerleaders.

So much for the acc chairs. He'd be lucky now to get himself back to the cave.

There was motion at the corner of his eye: He looked up. Unlike dogs, these creatures could climb! The animal picked its way carefully across the rock face, its skinny limbs splayed out in four directions. It was almost to the cave entrance. *Della!* He stepped back from the rock, and threw the comm scepter as hard as he could. The ball end caught the creature on its spine, midway between shoulder and haunch. It screamed and fell, the scepter clattering down behind it. The creature lay on its back, its hind quarters limp, the forelegs sweeping in all directions. As Wil darted forward to grab the scepter, one of its clawed fingers raked his arm.

Wil was vaguely aware of shooting pain, of wet spreading down his sleeve. So the cave was not safe. Even if he

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

could get back there, it would be hard to defend; there were several approaches. He risked another glance upward. There was another cave still higher in the rock. The approach was bordered by sheer walls. He might be able to defend it.

The sighted ones circled inward. He pushed the chair under the overhang, then ran to the rock face, jumping high. The dogthings were close behind—only this time he had a free hand. He swung the scepter past their noses, then crawled upward another meter. One of the creatures was climbing parallel with him. Its progress was slow, no more agile than a human's. Was it coming after him—*or trying to get to Della?* Wil pretended to ignore it. He paused again to swipe at those who harried him from below. He could hear the climber's claws on stone. It was sidling toward him, fingerhold to fingerhold. Still Wil ignored it. *I'm an easy mark, I'm an easy mark.*

One of the lower dogs bit into his boot. He bent, crushed its skull with the scepter.

He knew the other was less than a meter away now, coming down from above. Without turning his head, Wil jammed the scepter upward. It hit something soft. For an instant man stared at dogthing, neither enjoying the experience. Its jaws opened in a hissing growl. Its claws were within striking distance of Wil's face, but the scepter was pushing against its chest, forcing it off the cliff. Brierson tucked his head against his arm and pushed harder. For a moment they were motionless, each clinging to the rock. Wil felt his hold giving way. Then something crashed into the dog from above, and its growl became a shriek. Its claws scraped desperately against stone. Resistance abruptly ceased and it fell past him.

But the others were still coming. As he scrambled higher, he glanced up. *Something* was looking down at him from the cave. The face was strangely splotched, but human. Somehow, Della had beaned the dog. He would have shouted thanks, but he was too busy hustling up the wall.

He hoisted himself over the cave's edge, turned and took a poke at the dog that was coming up right after him. This one was lucky, or Wil was slowing down: it snapped its head around Wil's thrust and grabbed the shaft of the scepter. Then it pulled, dragging Wil half out of the cave, tearing the scepter from his hands. The creature fell down the cliffside, taking several comrades with it.

Wil sat for a moment, gasping. What an incompetent jerk he was. Marta had lasted four decades, alone, in this sort of wilderness. He and Della had been on the ground less than four hours. They had made all sorts of stupid mistakes, now losing their only weapon. More dogthings were gathering below. If he and Della lasted another hour, it would be a miracle.

And they wouldn't last ten minutes if they stayed in this cave. Between gasping breaths, he told Della about the cave further up. She was lying on her stomach, her head turned to one side. The dark on her face and shirt was blood. Every few seconds, she coughed, sending a dark spray across the stone. Her voice was soft, the words not completely articulated. "I can't climb any-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

where, Wil. Had to belly crawl t'get here."

They were coming up the wall again. For a strange instant, Wil considered the prospect of his own demise. Everyone wonders how he'll check out. In a policeman's case there are obvious scenarios. Never in a million years would he have guessed this one—dying with Della Lu, torn to pieces by creatures that in human history did not exist.

The instant passed and he was moving again, doing what he could. "Then I'll carry you." He took her hands. "Can you grab around my neck?"

"Yeah."

"Okay." He turned, guided her arms over his shoulders. He rose to his knees. She held on, her body stretched along his back. He was fleetingly aware of female curves. She had changed more than her hair since that day at the beach.

He wiped one hand on his pants. The nick on his arm was only oozing, but there was enough blood to make him slippery. "Tell me if you start losing your grip." He crawled out of the cave, onto an upward slanting ledge. Della massed more than the acc chair, but she was doing her best to hang on. He had both hands free.

The ledge ended in a narrow chimney heading straight up. Somewhere behind them, a firefight glowed. It brought no anxiety to his mind, only gratitude. The light showed breaks in the rock. He stepped in one on the left side, then one on the right, practically walking up the slot. He could see the entrance to the upper cave, scarcely two meters ahead.

The dogs had made it to the first cave. He could hear them clicking along the ledge. If this was easy for him, it was easy for them. He looked down, saw three of them racing single file up the slot.

"Hold tight!" He scrambled for the top, had his arms hooked over the entrance the same instant the lead dog got his foot. This time, he felt teeth come straight through the plastic. Wil swung his leg away from the wall, the animal a twisting weight on his foot. Its forelegs clawed at his calf.

Then he had the right angle: the boot slipped from his foot. The dog made a frantic effort to crawl up his leg, its claws raking Wil's flesh. Then it was gone, crashing into its comrades below.

Wil pulled himself into the cave, and lay Della on her side. His leg was a multiple agony. He pulled back the pants leg. There was a film of blood spreading from the gashes, but no spurting. He could stop the bleeding if given a moment's peace. He pressed down on the deepest wound, at the same time watching for another assault. It probably didn't matter. His fingernails and teeth weren't in a class with the dog's claws and fifteen-millimeter canines.

. . . bad luck comes in bunches. Wil's nose was finally communicating the stench that hung in the cave. The other one had smelled of death, bones crusted with fragments of desiccated flesh; the smell here was of wet putrefaction. Something big and recently dead lay behind them. And something else *still* lived here: Wil heard metallic clicking.

Wil leaned forward and slipped his other boot onto his fist. He continued the motion into a quick turn that brought him up and facing into the cave. The distant firefight lit the cave in ambigu-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ous shades of gray. The dead thing had been a near-dog. It lay like some impressionist holo—parts of the torso shrunken, others bloated. Things moved on the body . . . and in it: enormous beetles studded the corpse, their round shells showing an occasional metallic highlight. These were the source of the clicking.

Wil scrambled across the litter of old bones. Up close, the smell stuffed the cave with invisible cotton, leaving no room for breathable air. It didn't matter. He had to get a close look at those beetles. He took a shallow breath and brought his head close to one of the largest. Its head was stuck into the corpse, the rear exposed. That armored sphere was almost fifteen centimeters across. Its surface was tesselated by a regular pattern of chitin plates.

He sat back, gasped for air. Was it possible? Marta's beetles were in Asia, fifty thousand years ago. Fifty thousand years. That was enough time for them to get across the land bridge . . . also enough time for them to lose their deadly talent.

He was going to find out: The dogs were yowling again. Louder than before. Not loud enough to cover the sound of claws on stone. Wil thrust his hands into the soft, dead flesh, and separated the beetle from its meal. Pain stabbed through a finger as it bit him. He moved his grip back to the armored rear, and watched the tiny legs wave, the mandibles click.

He heard the dogs coming along the ledge to the chimney.

Still no action from his little friend. Wil tossed the creature from hand to hand, then shook it. A puff of hot gas hissed between his fingers. There was a new smell, acrid and burning.

He took the beetle to the cave entrance, and gave it another shake. The hiss got louder, became almost sibilant. The armored shell was almost too hot to touch. He kept the insect excited through another ten seconds. Then he saw a dog at the bottom of the slot. It looked back, then charged up the chimney, three others close behind. Wil gave the beetle one last shake and threw it downward, into the cliff face just above the lead dog. The explosion was a sharp cracking sound, without a flash. The dog gave a bubbling scream and fell against the others. Only the trailing animal kept its footing—and it retreated from the chimney.

Thank you, Marta! Thank you!

There were two more attacks during the next hour. They were easily beaten back. Wil kept a couple of grenade beetles close to the edge of the cave, at least one near the bursting point. How near the bursting point he didn't know, and in the end he feared the beetles more than the dogs. During the last attack, he blew four dogs off the rock—and got his own ear ripped by a piece of chitinous shrapnel.

After that, they stopped coming. Maybe he had killed all the sighted ones; maybe they had wised up. He could still hear the blind ones, down beneath the overhang. The howling had sounded sinister; now it seemed mournful, frightened.

The space battle had wound down, too. The aurora was bright as ever, but there were no big firefights. Even isolated flashes were rare. The most spec-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

tacular sight was an occasional piece of junk progressing stately across the sky, slowly disintegrating into glowing debris as it fell through the atmosphere.

When the dogs stopped coming, Wil sat beside Della. The emp attack had blown the electronics in her skull. Moving her head caused intense pain and dizziness. Most of the time, she lay silent or softly moaning. Sometimes she was lucid: though she was totally cut off from her autons, she guessed that her side was winning, that it had slowly ground down the other high-techs. And some of the time she was delirious, or wearing one of her weirder personalities, or both. After a half-hour silence, she coughed into her hand and stared at the new blood splattered on the dried. "I could die now. I could really die." There was wonder in her voice, and fascination. "Nine thousand years I have lived. There aren't many people who could do that." Her eyes focused on Wil. "You couldn't. You're too wrapped up in the people around you. You like them too much."

Wil brushed the hair from her face. When she winced, he moved his hand to her shoulder. "So I'm a pussycat?" he said.

". . . No. A civilized person, who can rise to the occasion. . . . But it takes more than that to live as long as I. You need singlemindedness, the ability to ignore your limitations. Nine thousand years. Even with augmentation, I'm like a flatworm attending the opera. A hundred responses a planarian has? And then what does it do with the rest of the show? When I'm connected, I can remember it all, but where is the original me? . . . I've drifted through every thing this mind can be. I've run out of happy endings . . . and sad ones, too." There was a long silence. "I wonder why I'm crying."

"Maybe there's something left to see. What brought you this far?"

"Stubbornness, and . . . I wanted to know . . . what happened. I wanted to see into the Singularity."

He patted her shoulder. "That still may be. Stick around."

She gave a small smile, and her hand fell against him. "Okay. You were always good for me, Mike."

Mike? She *was* delirious.

The lasers and nukes had been gone for hours. The aurora was fading with the morning twilight. Della had not spoken again. The rotting dogthing brought warmth (and by now Wil had no sense of smell whatsoever), but the night was cold, less than ten degrees. Wil had moved her next to the creature and covered her with his jacket and shirt. She no longer coughed or moaned. Her breathing was shallow and rapid. Wil lay beside her, shivering and almost grateful to be covered with dogthing gore, dried blood, and general filth. Behind them, the beetles continued their clicking progress through the corpse.

From the sound of Della's breathing, he doubted she could last many more hours. And after the night, he had a good idea of his own wilderness longevity.

He couldn't really believe that Della's forces had won. If they had, why no rescue? If they hadn't, the enemy might never discover where they were hidden—might never even care. And he

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

would never know who was behind the destruction of the last human settlement.

Twilight brightened toward day. Wil crept to the cave entrance. The aurora was gone, blotted out by the blue of morning. From here he wouldn't see the sunrise, but he knew it hadn't happened yet; there were no shadows. All colors were pastels: the blue in the sky, the pale green of the grassland, the darker green in the trees. For a time nothing moved. Cool, peaceful silence.

On the ground, the dogthings roused themselves. By twos and threes they walked onto the plain, smelling morning, but not able to see it. The sighted ones ran out ahead, then circled back, trying to get the others to hustle. From a safe distance, and in daylight, Wil had to admit they were graceful—even amusing—creatures: slender and flexible, they could run or belly crawl with equal ease. Their long snouts and narrow eyes gave them a perpetually crafty look. One of the sighted ones glanced up at Wil, gave an unconvincing growl. More than anything, they reminded him of the frustrated coyote that had chased a roadrunner bird through two centuries of comic animation.

In the western sky, something glittered, metal in sunlight. Dogthings forgotten, Wil stared up. Nothing but blue now. Fifteen seconds passed. Three black specks hung where he'd seen the light. They didn't move across the sky, but slowly grew. A ripple of sonic booms came across the plain.

The fliers decelerated to a smooth stop a couple of meters above the grass. All three were unmarked, unmanned. Wil considered scrambling to the rear of the cave—but he didn't move. If they looked, they would find. Loser or winner, he was damned if he'd cower.

The three hung for a moment in silent conference. Then the nearest slid, silent and implacable, up the air toward Wil.

25

For whatever it might be worth, Wil's side was the winner. He was released by the medics in less than an hour. His body was whole, but stiff and aching; the medical autons didn't waste their time on finishing touches. There were really serious casualties, and only a part of the medical establishment had survived the fight. The worst cases were simply popped into stasis. Della disappeared into her system, with the autons' assurance that she would be substantially well in forty hours.

Wil tried not to think about the disaster that spread all around them, tried not to think that it was his fault. He had thought the search for the cairn would provoke an attack—but on himself and Della, not on all humanity.

That attack had killed almost half the human race. Wil couldn't bring himself to ask Yelén directly, but he knew anyway: Marta's Plan was dead. He had failed in the only way that mattered. And yet he still had a job. He still had a murderer to catch. It was something to work on, a barricade against grief.

Although the price was higher than he ever wished to pay, the battle had given him the sort of clues he'd hoped for. Della's system had retrieved the cairn bobble; its contents would be available in twenty-four hours. And there were other things to look at. It was clear now that the enemy's only power had lain in his perversion of others' sys-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

tems. But at every step, they had underestimated that power. After Marta's murder, they thought it was shallow penetration, the perversion of a bug in the Korolev system. After Wil found the clue in the Diary, they thought the enemy had deeper penetration, but still of Korolev's system alone; they guessed the killer might be able to usurp parts of Yelén's forces. And then came the war between the low-techs. It had been a diversion, covering the enemy's final, most massive assault. That assault had been not on Korolev's system alone, but on Genet's and Chanson's and Blumenthal's and Raines's. Every system except Lu's had been taken over, turned to the business of killing Wil and Della.

But Della Lu was very hard to kill. She had fought the other systems to a standstill, then beaten them down. In the chaos of defeat, the original owners climbed out of system-metaphorical bunkers and reclaimed what was left of their property.

Everyone agreed it couldn't happen again. They might even be right. What remained of their computing systems was pitifully simple, not deep enough or connected enough for games of subtle perversion. Everyone agreed on something else: The enemy's skill with systems had been the equal of the best and biggest police services from the high-techs' era.

So. It was a big clue, though small compared to the price of the learning. Related, and at least as significant: Della Lu had been immune to the takeover. Wil put the two together and reached some obvious conclusions. He worked straight through the next twenty-four hours, studying Della's copy of GreenInc—especially the garbled coverage of the late twenty-second. It was tedious work. At one time, the document had been seriously damaged; the reconstruction could never be complete. Facts and dates were jumbled. Whole sections were missing. He could understand why Della didn't use the later coverage. Wil kept at it. He knew what to look for . . . and in the end he found it.

A half-trashed db would not convince a court, but Wil was satisfied: he knew who killed Marta Korolev. He spent an empty, hateful afternoon trying to figure how to destroy the murderer. What did it matter now? Now that the human race was dead.

That night, Juan Chanson dropped by Wil's new quarters. The man was subdued; he spoke scarcely faster than a normal person. "I've checked for bugs, my boy, but I want to keep this short." Chanson looked nervously around the tiny room that was Wil's share of the refugee dorm. "I noticed something during that battle. I think it can save us all." They talked for more than an hour. And when Chanson left, it was with the promise they would talk again in the morning.

Wil sat thinking for a long time after the other left. *My God, if what Juan says is true. . . .* Juan's story made sense; it tied up all the loose ends. He noticed he was shivering: not just his hands, his whole body. It was a combination of joy and fear.

He had to talk to Della about this. It would take planning, deception, and good luck, but if they played their cards exactly right, the settlement still had a chance!

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

* * *

On the third day, the survivors gathered at castle Korolev, in the stone amphitheater. It was mostly empty now. The aborted war between New Mexico and the Peace had killed more than one hundred low-techs. Wil looked across the theater. How different this was from the last meeting here. Now the low-techs crowded together, leaving long sweeps of bench completely empty. There were few uniforms, and the insignia had been ripped from most of those. Ungovs, NMs, Peacers sat mixed together, hard to tell apart; they all looked beaten. No one sat on the top benches—where you could look down through the castle's jacarandas at the swath of burn and glaze that had been Town Korolev.

Brierson had seen the list of dead. Still, his eyes searched across the crowd, as if he might somehow see the friends—and the enemy—he had lost. Derek Lindemann was gone. Wil was genuinely sorry about that—not so much for the man, but for losing the chance to prove he could face Derek without rage. Rohan was dead. Cheerful, decent Rohan. The brothers had taken Wil's warning, and hidden beneath their farm: Hours passed. The autons left. Rohan went outside to bring down the last of their equipment. When the bombs fell, he was caught in the open.

Dilip had come to the meeting alone. Now he sat with Gail Parker, talking softly.

"I suppose we can begin," Yelén's voice cut across the murmur of the crowd. Only the amplification gave her voice force; her tone was listless. The burden she had carried since Marta died had finally slipped, and crushed her. "For the low-techs, some explanations. You fought a war three days ago. By now, you know you were maneuvered into fighting. It was a cover for someone to grab our high-tech systems and start the larger fight you've seen in near space. . . . Your war killed or maimed half the human race. Our war destroyed about ninety percent of our equipment." She leaned against the podium, her head down. "It's the end of our Plan; we have neither the genetic resources nor the equipment to reestablish civilization.

"I don't know about the other high-techs, but I'm not going to bobble out. I have enough resources to support you all for a few years. If I spread it around, what's left of my medical resources should be enough to provide a twentieth century level of care for many decades. After that . . . well, our life in the wilderness will be better than Marta's, I guess. If we're lucky, we may last a century; Sánchez did, and he had fewer people."

She paused, and seemed to swallow something painful. "And you have another option. I—I've cut the suppressor field. You are all free to bobble out of this era." Her gaze moved reluctantly across the audience, to where Tammy Robinson sat. She sat alone, her face somber. Yelén had released her from stasis at the first opportunity after the battle. So far, Tammy had done nothing to take advantage of the debacle; her sympathy seemed genuine. On the other hand, she had nothing to lose by magnanimity. The wreckage of the Korolev Plan was now hers for the taking.

Yelén continued. "I suppose that we

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

really didn't need a meeting for me to say this. But even though what Marta and I hoped for is dead, I still have one goal before we all fade into the wilderness." She straightened, and the old fire came back to her voice: "I want to get the creature that killed Marta and wrecked the settlement! Except for some wounded low-techs, everyone is here this afternoon. . . . Odds are, the killer is, too. W.W. Brierson claims he knows who the killer is . . . *and can prove it.*" She looked up at him, her smile a bitter mocking. "What would you do, ladies and gentlemen, confronted by the most famous cop in all civilization—telling you he had suddenly solved the case you had spent a hundred years thinking on? What would you do if that cop refused to reveal the secret except to a meeting of all concerned? . . . I laughed in his face. But then I thought, 'what more is there to lose?' This *is* W.W. Brierson; in the novels, he solves all his cases with a flashy denouement." She bowed in his direction. "Your last case, Inspector. I wish you luck." She walked from the stage.

Wil was already on his feet, walking slowly down the curve of the amphitheater. Someday he would have to read Billy's novels. Had the boy really ended each by confronting a roomful of suspects? In his real life, this was only the third time he had ever seen such a thing. Normally, you identified the criminal, then arrested him. A denouement with a roomful—in this case, an auditoriumful—of suspects meant that you lacked either the knowledge or the power to accomplish an arrest. Any competent criminal realized this, too; the situation was failure in the making.

And sometimes it was the best you could do. Wil was aware of the crowd's absolute silence, of their eyes following him down the steps. Even the high-techs might be given pause by his reputation. For once, he was going to use the hype for all it was worth.

He stepped onto the stage, and put his data set on the podium. He was the only person who could see the two clocks on the display. At this instant they read 00:11:32 and 00:24:52; the seconds ticked implacably downward. He had about five minutes to set things up, else he would have to string the affair along for another twenty. Best to try for the first deadline—even that would require some stalling.

He looked across his audience, caught Juan's eye. None of this would have been possible without him. "For the moment, forget the disaster this has come to. What do we have? Several isolated murders, the manipulation of the governments, and finally the takeover of the high-techs' control systems. The murder of Marta Korolev and the system takeover are totally beyond the abilities of us low-techs. On the other hand, we know the enemy is not supernaturally powerful: He blew years of careful penetration in order to grab the systems. For all the damage he did, he wasn't able to maintain control—and now his perversions have been recognized and repaired." *We hope.*

"So. The enemy is one of the high-techs. One of these seven people." With a sweep of his hand he pointed at the seven. They were all in the first few rows, but with the exception of Blumenthal—who sat at the edge of the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

low-techs—they were spread out, each an isolated human being.

Della Lu was dressed in something gray and shapeless. Her head injuries had been repaired, but the temporary substitute for her implants was a bulky interface band. She was into her weirdness act. Her eyes roamed randomly around the theater. Her expression flickered through various emotions, none having reasonable connection with the scene around her. Yet without her firepower, Wil knew that Philippe Genet and Monica Raines could not have been persuaded to attend.

Genet sat three rows in front of Della. For all that his attendance was coerced, he seemed to be enjoying himself. He leaned against the edge of the bench behind him, his hands resting across his middle. The smile on his face held the same amused arrogance Wil had seen at the North Shores picnic.

There was no pleasure in Monica Raines's narrow face. She sat with hands tightly clasped, her mouth turned down at one side. Before the meeting, she'd made it clear that things had merely turned out as she predicted. The human race had cut its throat once again; she had no interest in attending the wake.

Yelén had retreated to the far end of the front bench, as far from the rest of humanity as one could sit. Her face was pale, the previous emotion gone. She watched him intently. For all her mocking, she believed him . . . and revenge was all she had left now.

Wil let the silence stretch through two beats. "For various reasons, several of these seven might want to destroy the settlement: Tunç Blumenthal and Della Lu may not even be human—Juan has warned us often enough about the Exterminators. Monica Raines has made no secret of her hostility toward the human race. Tammy Robinson's family has the announced goal of breaking up the colony."

"Wil!" Tammy was on her feet, her eyes wide. "We would never kill to—" she was interrupted by Della Lu's quiet laughter. She looked over her shoulder and saw the wild look on Lu's face. Tammy looked back at Wil, her lips trembling. "Wil, believe me."

Brierson waited for her to sit before he continued; the counts on his display flat were 00:10:11 and 00:23:31. "Evidently, a good *motive* is of no use in identifying the enemy. So let's look at the enemy's actions. Both the Peacer and NM governments were infiltrated. Can they tell us anything about whom we're up against?" Wil looked across the low-techs, Peacers and NMs together. He recognized top staff people from both sides. Several shook their heads. Someone shouted, "Fraley must have known!"

The last President of the Republic sat alone. His uniform still bore insignia, but he was slouched forward, his elbows on his knees and his hands propping up his chin. "Mr. President?" Wil said softly.

Fraley looked up without raising his head. Even his hatred for Wil seemed burnt out. "I just don't know, Brierson. All our talks were over the comm. He used a synthetic voice and never sent video. He was with us almost from the beginning. Back then, he said he wanted to protect us from Korolev, said we were the only hope for stability. We got

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

inside data, a few medical goodies. We didn't even see the machines that made the deliveries. Later on, he showed me that someone *else* was backing the Peacers. . . . From there, he owned our souls. If the Peace had high-tech backing, we'd be dead without our own. More and more, I was just his mouthpiece. In the end, he was all through our system." Now Fraley raised his head. There were dark rings around his eyes. When he spoke again, there was a strange intensity in his voice; if his old enemy could forgive him, perhaps he could himself. "I had no choice, Brierson. I thought if I didn't play ball, whoever was behind the Peace would kill us all."

A woman—Gail Parker—shouted, "So you had no choice, and the rest of us followed orders. And, and like good little troopers, we all cut our own throats!"

Wil raised his hand. "It doesn't matter, Gail. By that time, the enemy had complete control of your system. If you hadn't pushed the buttons, they would have been pushed for you." The short count on his display read 00:08:52. A map of the land around Castle Korolev suddenly flashed on the display, together with the words: "WIL: HE IS ARMED. GUNS AS ON MAP. I STILL SAY TO GO FOR IT. I'M READY ON THE MARK . . . 00:08:51."

Wil cleared the screen with a casual motion, and continued talking. "It's too much to expect that the enemy would have given away his name. . . . Yet I'm sure Kim Tioulang had figured it out. There was some *particular* person he was trying to avoid when he talked to me at the North Shore picnic; he was trying to get to Town Korolev when he was murdered.

"And that raises an interesting question. Steve Fraley is a smart guy. What would Kim see that Steve would not? Kim went back a long way. He was one of the three planetary directors of the Peace Authority. He was privy to every secret of that government—" Wil looked at Yelén. "We've concentrated so much on superscientific plots and villains, we've forgotten the machiavellis who came before us."

"There's no way our enemy could be a low-tech." Yelén's words were an objection, but there was sudden enthusiasm in her eyes.

Wil leaned across the podium. "Perhaps not now . . . but originally?" He pointed at Lu. "Consider Della. She grew up in the early twenty-first, was a top Peace cop. She also lived through most of the twenty-second. And now she's probably the most powerful high-tech of all."

Della had been mumbling to herself. Now her dark eyes came alive. She laughed, as if he had made a joke. "So true. I was born when people still died of old age. Kim and I fought for the last empire. And we fought dirty. Someone like me would be a tough enemy for the likes of you."

"If it's Della, we're dead," said Yelén. *And revenge is impossible.*

Wil nodded. The count stood at 00:07:43. "Who else fills the requirements? Someone high in the Peacer command structure. Of course, GreenInc shows that none of you high-techs has such a past. So this hypothetical other must have eluded capture during the fall of the Peace, covered his tracks, and

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

lived a new life through the twenty-second. It must have been a disappointing situation for him: the Peace forces straggling back into real time to be mopped up piecemeal, hope for a new Peace dying."

00:07:10. He wasn't speaking hypothetically anymore. "In the end, our enemy saw there was only one chance for the resurrection of his empire: The Peacer fort that was bobbled in Kampuchea. That was the Authority's best-equipped redoubt. Like the others it was designed to come back to real time in about fifty years. But by some grotesque accident, its bobbler had generated an enormously longer stasis. All through the twenty-second it lay a few hundred meters below ground, an unremarkable battle relic. But our enemy had plans for it. Fifty million years: surely no other humans would exist in such a remote era. Here was a golden opportunity to start the Peace over, and with an empty world. So our Peacer accumulated equipment, medical supplies, a zygote bank, and left the civilization he hated."

Genet's lazy smile was broader now, showing teeth. "And who might be so high in the Peace Authority that Tioulang would recognize him?" Juan Chanson seemed to shrink in upon himself.

Wil ignored the byplay. "Kim Tioulang was Peace Director for Asia. There were only two other Directors. The American one was killed when Livermore returned to real time in 2101. The Director for Eurafrica was—"

"—Christian Gerrault," said Yelén. She was on her feet, walking across the floor of the amphitheater, her eyes never leaving Genet. "The fat slug they called the Butcher of Eurafrica. He disappeared. All through the twenty-second his enemies waited around likely bobbles, but he was never found."

Genet looked from Yelén to Wil. "I commend you, Inspector, though if you had taken much longer to discover my identity, I would have had to announce it myself. Except for a few loose ends, my success is now complete. It's important that you understand the situation: Survival is still possible . . . but only on my terms." He glanced at Yelén. "Sit down, woman."

00:05:29. The timing was out of Wil's hands now. He had the terrible feeling this had come too soon.

Gerrault/Genet looked at Yelén, who had stopped her advance, but was still standing. "I want you all to understand what I have gone through to achieve this moment. You must not doubt that I will show the disobedient no mercy.

"For fifty years I lived in the pitiful anarchy you call *civilization*. For fifty years I played the game. I lightened my skin. I starved one hundred kilos off my normal body weight. I starved myself of the . . . pleasures . . . that are due a great leader. But I suppose that is what makes me Christian Gerrault, and you sheep. I had goals for which I was willing to sacrifice anything and anyone. My new order might take fifty million years to flower, but there was work to be done all along the way. I heard of the Korolevs and their queer plan to rescue the shanghaied. At first, I thought to destroy them. Our plans were so much alike. Then I realized that they could be used. Till near the end, they would be my allies. The important thing was that they lack some critical element

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

of success, something only *I* could supply." He smiled at the still standing Yelén. "You and Marta had everything planned. You even brought enough med equipment and fertilized human eggs to ensure the colony's survival. . . . Have you ever wondered why those zygotes were nonviable?"

"*You?*"

Gerrault laughed at the horror in Yelén's face. "Of course. Foolish, naive women. I guaranteed your failure even before you left civilization. It was an expensive operation: I had to buy several companies to guarantee your purchase would be trashed. But it was worth it. . . . You see, *my* supply of zygotes and *my* medical equipment still survive. They are the only such in existence now." He came to his feet, and turned to face the main part of his audience. His voice boomed across the theater, and Wil wondered that he had not been recognized before. True, his appearance and accent were very different from the historical Gerrault. He looked more like a North American than an African, and his body was gaunt to the point of emaciation. But when he talked like this, the soul within shone through all disguise. This was the Christian Gerrault of the historical videos. This was the fat, swaggering Director whose megalomania had dominated two continents and dwarfed any rational self-interest.

"Do you understand? It simply does not matter that you outnumber me, and that Della Lu may outgun me. Even before this regrettable little war, the success of the colony was an unlikely thing. Now you've lost much of the medical equipment the other high-techs brought. Without me, there is no chance of a successful settlement. Without me, every one of you low-techs will be dead within a century." He lowered his voice with dramatic effect. "And with me? Success of the colony is certain. Even before the war, the other high-techs could not have supplied the medical and population support that I can. But be warned. I am not a soft-hearted pansy like Korolev, or Fraley, or Tioulang. I have never tolerated weakness or disloyalty. You will work for me, and you will work very, very hard. But if you do, most of you will survive."

Gerrault's gaze swept the audience. Wil had never seen such horrified fascination on people's faces. An hour ago they were trying to accept the prospect of slow extinction. Now their lives were saved . . . if they would be slaves. One by one, they turned their eyes from the speaker. They were silent, avoiding even each others' eyes. Gerrault nodded. "Good. Afterwards, I want to see Tioulang's staff. He failed me, but some of you were good men once. There may be a place for you in my plans."

He turned to the high-techs. "Your choice is simple: If you bobble out of this era, I want at least one hundred megayears free of your interference. After that, you may die as quickly or as slowly as you wish. If you stay, you give me your equipment, your systems, and your loyalty. If the human race is to survive, it will be on *my* terms." He looked at Yelén. He was smiling again. "I told you once, slut: *sit down.*"

Yelén's whole body was rigid, her arms half raised. She stared right through Gerrault. For a moment Wil was afraid she might fight. Then something broke

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

and she sat down. She was still loyal to Marta's dream.

"Good. If you can be sensible, perhaps the rest can." He looked up. "You will deliver system control to me now. And then I'll—"

Della laughed, and stood up. "I think not, Director. The rest may be domesticated animals, but not me. And I outgun you." Her smile, even her stance, seem disconnected from the situation. She might have been discussing some parlor game. In its way, her manner was scarier than Gerrault's sadism; it stopped even the Director for a fraction of a second.

Then he recovered. "I know you; you're the gutless traitor who betrayed the Peace in 2048. You're the sort who bluffs and blusters, but is basically spineless. You must also know *me*. I don't bluff about death. If you oppose me, I'll take my zygotes and med equipment, and leave you all to rot; if you pursue and destroy me, I'll make sure the zygotes die too." His voice was flat, determined.

Della shrugged, still smiling. "No need to puff and spit, Christian dear. You don't understand quite what you're up against. You see, I believe every word you say. *But I just don't care*. I'm going to kill you anyway." She walked away from them. "And the first step is to get myself some maneuvering room."

Gerrault's mouth hung open. He looked at the others. "I'll do it, I really will! It will be the end of the human race." It was almost as if he were seeking their moral support. He had been outmonstered.

Yelén shouted, her voice scarcely recognizable, "Please, Della, I *beg!* Come back!"

But Della Lu had disappeared over the crest of the amphitheater. Gerrault stared after her for only a second. Once she got out of the way, suppressor fields and tremendous fire power would be brought to bear on the theater. Everyone here could be killed—and Della had convincingly demonstrated that that wouldn't bother her. Gerrault sprinted for the floor level exit. "But I'm not bluffing. I'm not!" He stopped for an instant at the door. "If I survive, I'll return with the zygotes. It is your duty to wait for me." Then he was gone, too.

Wil held his breath through the next seconds, praying for anticlimax. Dark shapes shot skyward, leaving thunder behind. But there was no flash of energy beams, no nukes. There was no shifting of sun in sky as might happen if they were bobbled; the combatants had moved their battle away from the amphitheater.

For the moment they lived. The low-techs huddled in clumps; someone was weeping.

Yelén's head was buried in her arms. Juan's eyes were closed, his lower lip caught between his teeth. The other high-techs were caught in less extreme poses . . . but they were all watching action beyond human eyes.

Wil looked at his display flat. It was counting down the last ninety seconds. The western sky flashed incandescent, two closely spaced pulses. Tunç said, "They both nuked out . . . they're over the Indian Ocean now." His voice was distant, only a small part of his attention devoted to reporting the action to those who could not see. "Phil's got his force

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

massed there. He has a local advantage." There was a ripple of brightness, barely perceptible, like lightning beyond mountains. "Fire fight. Phil is trying to punch through Della's near Earth cordon. . . . He made it." There was a scattered and uncertain cheer from the low-techs. "They're outward bound, under heavy nuke drive. Just boosted past three thousand klicks per second. They'll go through the trailing Lagrange zone." Christian Gerrault had some important baggage to pick up on his way out.

And Wil's display read 00:00:00. He looked at Juan Chanson. The man's eyes were still closed, his face a picture of concentration. A second passed. Two. Suddenly he was grinning, and giving a thumbs up sign. Christian's baggage was no longer available for pickup.

For a moment Wil and Juan grinned stupidly at each other. There was no one else to notice. "Five thousand kps. . . . Strange. Phil has stopped boosting. Della will be on top of him in. . . . We've got another firefight. She's chewing him up. . . . He's broken off. He's running again, pulling away from her."

Wil spoke across the monologue. "Tell 'em, Juan."

Chanson nodded, still smiling. Suddenly Tunç stopped talking. A second passed. Then he swore, and started laughing. The low-techs stared at Blumenthal; all the high-techs were looking at Chanson.

"Are you *sure*, Juan?" Yelén's voice was unsteady.

"Yes, yes, *yes!* It worked perfectly. We're rid of both of them now. See. They've shifted to long-term tactics. However their fight ends, it will be thousands of years, dozens of parsecs from here." Brierson had a sudden, terrible vision of Della pursuing Gerrault into the depths forever.

Fraley's voice cut across Chanson's. "What in *hell* are you talking about? Gerrault has the med equipment and the zygotes. If he's gone, they're gone—and we're dead!"

"No! It's all right. We, I—" He was dancing from one foot to the other, frustrated by the slowness of spoken language. "Wil! Explain what we did."

Wil pulled his imagination back to Earth, and looked across the low-techs. "Juan managed to separate the med equipment from Gerrault," he said quietly. "It's sitting up there in the trailing Lagrange zone, waiting to be picked up." He glanced at Chanson. "You've transferred control to Yelén?"

"Yes. I really don't have much space capability left."

Wil felt his shoulders slowly relax; relief was beginning to percolate through him. "I've suspected 'Genet' almost from the beginning; he knew it, and he didn't care. But during our war, all the high-tech systems were taken over to fight Della. Juan—or any of the others—can tell you what it was like. They were not completely cut out of their systems; they had just lost control. In any battle, a lot of information is flowing between nodes. In this one, things were especially chaotic. In places, data security failed; irrelevant information leaked across. Part of what passed through Juan's nodes was the specs on Gerrault's med system. Juan saw what Gerrault had, where it was, and the exact lookabout timings of the bobbles that

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

protected Gerrault's zygotes and inner defenses."

He paused. "This meeting was a setup. I-I'm sorry about keeping you all in the dark. There were only certain times when an attack could succeed—and then only if Gerrault had moved most of his defenses away from the trailing Lagrange."

"Yes," said Juan, his excitement reduced to manageable proportions, "this meeting was necessary, but it was the riskiest part of the whole affair. If we trumped him while he was still here, Gerrault might have done something foolish, deadly. Somehow we had to trick him into running without shooting at us first. So Wil told the story you heard, and we played our two greatest enemies against each other." He looked up at Brierson. "Thanks for trusting me, my boy. We'll never know exactly what drove the Lu creature. Maybe she really was human; maybe all her years alone just turned her mind into something alien. But I knew she couldn't resist, if you told her the right lies about the zygote bank; she'll chase Gerrault to the end of space-time to destroy it."

Now there really was cheering. Some of the cheerers were a little exhausted, perhaps: their future had been bounced around like a volleyball these last few minutes. But now, "Now we can make it!" Yelén shouted. Peacers, Ungovs, NMs were embracing. Dilip and a crowd of low-techs came down to the podium to shake Wil's hand. Even the high-tech reserve was broken. Juan and Tunç were in the middle of the crowd. Tammy and Yelén stood less than a meter apart, grinning at each other. Only Monica Raines had not left her seat; as usual, her smile was turned down at one corner. But Wil thought it was not so much disappointment at their salvation, as envy that everyone else could be so happy.

Wil suddenly realized that he could leave it at this. Perhaps the settlement *was* saved. Cetainly, if he went ahead with the rest of his plan, the danger to himself could be greater than everything up to now.

It was a thought, never a real choice. He owed some people too much to back down now.

Wil broke from the crowd and returned to the podium. He turned up the amplification. "Yelén. Everybody." The laughter and shouting diminished. Gail Parker jumped on a bench and cried. "Yay, Wili! Speech. Speech! Wili for President!" This provoked even more laughter; Gail always did have a sharp sense of the ridiculous. Wil raised his hands, and the uproar subsided again. "There are still some things we must settle."

Yelén looked at him, her face relaxed yet puzzled. "Sure, Wil. I think we can put a lot of things right, now. But—"

"That's not what I mean, Yelén. I still haven't done what you hired me for. . . . I still haven't produced Marta's murderer."

The talk and laughter guttered to a stop. The loudest sounds were the birds stealing from the spiders beyond the amphitheater. Where the faces didn't show blank surprise, Wil could see the fear returning. "But, Wil," Juan said finally, "we *got* Gerrault—"

"Yes. We got him. There's no fakery in that, nor in the equipment we rescued. But Christian Gerrault did not kill

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Marta, and he didn't take over the high-tech computer systems. Did you notice that he never admitted to either? He was as much a victim of the takeover as any. Finding the systems saboteur was one of the 'loose ends' he intended to clear up."

Juan waved his hands, his speech coming faster than ever. "Semantics. He explicitly admitted to taking over the low-techs' military systems."

Wil shook his head. "No, Juan. Only the Peacers'. All the time we thought one high-tech was stirring up both sides, when actually Gerrault was behind the Peace and *you* were manipulating the NMs."

The words were spoken and Wil still lived.

The little man swallowed. "Please, my boy, after everything I've done to help, how can you say this. . . . I know! You think only a systems penetrater could know about Gerrault's med equipment." He looked imploringly at Yelén and Tammy. "Tell him. Things like that happen in battle, especially when penetration—"

"Sure," Yelén said. "It may seem a far-fetched explanation to someone from your era, Wil, but leak-across can really happen." Tunç and Tammy were nodding agreement.

"It doesn't matter." There was no doubt in Wil's face or voice. "I knew that Juan was Marta's killer before he ever came to me about Gerrault." *But can I convince the rest of you?*

Chanson's hands balled into fists. He backed into a bench and sat down abruptly. "Do I have to take this?" he cried to Yelén.

Korolev set her hand on his shoulder. "Let the *Inspector* have his say." When she looked at Wil, her face had the angry ambivalence he knew so well. Together, Wil and Juan had just saved the colony. But she had known Chanson through decades of their lives; Wil was the low-tech that her Marta had damned and praised. There was no telling how long her patience would last.

Brierson stepped around the podium. "At first, it seemed that almost any high-tech could have marooned Marta: there were bugs in the Korolev system that made it easy to sabotage a single bobbling sequence. With those bugs repaired, Yelén and the others thought their systems were secure. Our war showed how terribly wrong they were. For twelve hours, the enemy had complete control of all the systems—except Della's. . . .

"This told me several things. In my time, it was no trivial thing to grab an entire system. Unless the system were perverted to begin with, it took expert, tedious effort to insert all the traps that would make a grab possible. Whoever did this needed years of visitor status on the high-techs' systems. The enemy never had a chance at Della; she was gone from the solar system since just after the Singularity."

He looked across his audience. The low-techs hung on every word. It was harder to tell about the others. Tammy wasn't even looking at him. Wil could only imagine the analysis and conversation that were going on in parallel with his words. "So. An expert, using expert tools, must be behind this. But Yelén's GreenInc shows that none of the high-techs have such a background."

Tunç interrupted, "Which only means

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the killer rewrote history to protect himself."

"Right. It needn't have been much, just a fact here and there. Over the years, the killer could manage it. Della's dbs are the only ones that might contain the truth. I spent a lot of time with them after we were rescued. Unfortunately, her general database for the late twenty-second is badly jumbled—so badly that Della herself didn't use it. But after the battle, I knew what to look for. Eventually I found an opening: Jason Mudge. Mudge was just the religious fanatic we knew, though toward the end of the twenty-second he actually had some disciples. Only one of them had sufficient faith to follow him into stasis. That was Juan Chanson. Juan was a wealthy man, probably Mudge's biggest catch." Wil looked at Chanson. "You gave up a lot to follow a religious dream, Juan. Della's dbs show you were head of Penetration & Perversion at USAF, Inc." In Wil's time, USAF had been the largest weapons maker in North America; it had grown from there. "I don't doubt that when Juan left, he took the latest software his division had invented. We were up against industrial strength sabotage."

Juan was trembling. He looked up at Yelén. She stared back for a second, then looked at Wil. She wasn't convinced. "Yelén," Wil said, keeping his voice level, "don't you remember? The day Mudge was killed, he claimed Chanson had been a religionist."

Yelén shook her head. That memory was three days gone.

Finally Chanson spoke aloud. "Don't you see how you've deluded yourself, Wil? The evidence is all around you. Why do you think Lu's record of civilization was jumbled? *Because she was never there!* At best those records were secondhand, filled with evidence she would use against me or whoever else was a threat. Wil, please. I may be wrong about the details, but whatever the Lu creature is, she's proved she would sacrifice us all for her schemes. No matter what she's done to you, you must be able to see that."

Monica's laugh was almost a cackle. "What a pretty bind you're in, Brierson. The facts explain either theory perfectly. And Della Lu is chasing off into interstellar space."

Wil pretended to give her comment serious consideration; he needed time to think. Finally he shook his head, and continued as calmly as before, "Even if you don't believe me, there are data Juan never thought to alter. Marta's diary for instance. . . . I know, Yelén, you studied that for a hundred years, and you knew Marta far better than I. But Marta knew she wasn't marooned by simple sabotage. She knew the enemy saw what she left in the cairns, and could destroy any of it. Even worse, if she slipped a message past the enemy, and you understood it, the act of understanding might itself trigger an attack.

"But *I* am a low-tech, outside all this automation. Marta got my attention with the one incident that only she and I could know. Yelén, after the Robinson party. . . . I didn't—I *never* tried to take advantage of Marta." He looked into Yelén's face, willing belief to be there.

When there was no response, he continued. "The last years of her life, Marta played a terrible double game.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

She told us the story of survival and courage and defeat, and at the same time she left clues she hoped would point me at Juan. They were subtle. She named her fishermonkey friends after people in our settlement. There was *always* a Juan Chanson, a solitary creature that delighted in watching her. Marta's last day alive, she mentioned that he was still out there, watching. She *knew* she was being stalked, and by the real Juan Chanson."

Juan slapped the bench. "God *damn* it, man! You can find any message if the coding scheme is nutty enough."

"Unfortunately, you're right. And if that's all she could do, this might be a stalemate, Juan. But for all her misfortunes, Marta had some good luck, too. One of her fishermonkeys was a freak, bigger and brighter than any fisher we've seen. He followed her around, tried to imitate her cairn-building. It wasn't much, but she had an ally in real time." He smiled wanly. "She named him W.W. Brierson. He got lots of practice building cairns, always in the same position relative to Peace Lake. In the end, she took him north and left him in a normal forest beyond the glazed zone. I don't know how close you were monitoring, Juan, but you missed what that animal took with him, you missed the cairn he built, where Marta never went."

Juan's eyes darted to Yelén, then back to Wil, but he said nothing.

"You've known about that cairn for four days, ever since I told Yelén. You were willing to show your full power —and kill half the human race—to prevent me from getting it." Wil stepped off the platform and walked slowly toward the little man. "Well, Juan, you didn't succeed. I've seen what Marta had to say when she didn't have to write in parables. Everyone else is free to see it, too. And no matter what conspiracies you blame on Della Lu, I suspect the physical evidence will convince Yelén and her lab autons."

Yelén had backed away from Chanson. Tunç's mouth was compressed into a thin line. *Even without a confession, I may be able to win,* thought Wil.

Juan looked around, then back at Wil. "Please. You're reading this all wrong. I didn't kill Marta. I *want* the settlement to succeed. And I've sacrificed more than any of you to preserve it; if I hadn't, none of us would have survived to fifty megayears. But now that's made me look like the guilty one. I've got to convince you. . . .

"Look. Wil. You're right about Mudge and me; I should never have tried to cover that up. I'm embarrassed I ever believed his chiliastic garbage. But I was young and my nightmares followed me home from work. I needed to believe in something. I gave up my job, everything, for his promises.

"We came out of stasis in 2295, just before Mudge's numerology said Christ would put on The Big Show. There was nothing but ruins, a civilization destroyed, a race exterminated. Mudge reviewed his mumbo-jumbo and concluded that he had overshot, that Christ had come and gone. The stupid little jerk! He just could not accept what we saw around us. Something had visited the solar system in the mid-twenty-third, but it hadn't been holy. The evidence of alien invasion was everywhere. Mudge had arrived with scarcely more than sackcloth and ashes. I'd brought

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

plenty of equipment. I could do analysis, back up my claims. I had the power to save what humans were still in stasis.

"Yelén, right from then my goal was the same as yours. Even while you high-techs were still in stasis, I was planning for it. The only difference was that I knew about the aliens. But I couldn't convince Mudge of them. In fact, the signs were so subtle, I began to wonder if anyone else would believe me." Chanson came to his feet, his talk speeding up. "Unless we guarded against the invaders, all the goodwill in the world could not resurrect the human race. I *had* to do something. I—I enhanced some of the evidence. I nuked a few ruins. Surely, not even a blind man could ignore that!" He looked at Yelén and Tammy accusingly. "Yet when you returned to real time, you weren't convinced. You couldn't accept even the clearest evidence. . . . I tried. I tried. Over the next two thousand years I traveled all over the solar system, discovering the signs of the invasion, emphasizing them so even idiots could not miss them.

"In the end, I had a little success. W.W. Sánchez had the patience to look at the facts, the open-mindedness to believe. We persuaded the rest of you to be a bit more cautious. But the burden of vigilance still rested on me. No one else was willing to put sentries in far solar space. Over the years, I destroyed two alien probes—and still Sánchez was the only one who was convinced." Juan was staring through Wil; he might have been talking to himself. "I really liked Bil Sánchez. I wish he hadn't dropped out; his settlement was just too small to succeed. I visited him there several times. It was a long, idyllic, downhill slide. Bil wanted to do research, but all he had was the Exterminater tape he'd found on Charon. He was obsessed with it; the last time I saw him he even claimed it was a fake." A faintly troubled look passed across Juan's face. "Well, that settlement was too small to survive, anyway."

Yelén's eyes were wide, white showing all around the irises; her whole body had gone rigid. Chanson could not notice, but sudden death was in the air.

Wil stepped into Yelén's line of sight; his voice was a calm echo of Chanson's distant tone. "What about Marta, Juan?"

"Marta?" Juan almost looked at him. "Marta always had an open mind. She granted the possibility of an alien threat. I think Lu's arrival scared her; the creature was so obviously inhuman. Marta talked to Lu, got access to some of her data bases. And then—and then," tears started in his eyes, "she started asking the db about Mudge." *How much had Marta suspected?* At the time, probably nothing; most of the jumbled references to Mudge had no connection with Chanson. It was tragic bad luck she started so close to Juan's secret. "I should never have lied about my past, but now it was too late. Marta could destroy all I had worked for. The colony would be left defenseless. I had to, I had to—"

"Kill her?" Yelén's voice was a shout.

"*No!*" Juan's head snapped up; the reality around him was not to be ignored. "I could never do that. I *liked* Marta! But I had to . . . quarantine her. I watched to see if she would denounce me. She never did—but then I realized

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

I could never be sure what she might say later. I couldn't let her back.

"Please *listen* to me! I made mistakes; I pushed too hard to make you see the truth. But you must *believe*. The invaders are out there, Yelén. They'll destroy everything you and Marta dreamed of if you don't believe m—" Juan's voice became a scream. He fell heavily, lay with arms and legs twitching.

Two quick steps and Wil was kneeling by his side. Wil looked down at the agonized face; he'd had two days to prepare for this moment, to suppress the killing rage he felt every time he saw Chanson. Korolev had had no such time; he could almost feel her eyes boring death through his back. "What did you do to him, Yelén?"

"I shut him down, cut his comm links." She stepped around Wil, to look down at Chanson. "He'll recover." There was a tight smile on her face; in a way it was scarier than her rage. "I want time to think of just revenge. I want him to understand it when it comes." Her eyes snapped up to the nearest bystanders. "Get him out of my sight." For once there was no debate; her words might as well have been electric prods. Tunç and three low-techs grabbed Chanson, carried him toward the flier that was drifting down the side of the amphitheater. Wil started after them.

"Brierson! I want to talk to you." The words were abrupt, but there was something strange in Yelén's tone. Wil came back down the steps. Yelén led him around the side of the platform —away from the crowd, which was just beginning to come out of shock. "Wil," she said quietly, "I want—I'd like to see what Marta said." *What Marta said when she wasn't writing for Chanson's eyes.*

Wil swallowed; even winning could be hard. He touched her shoulder. "Marta left the fifth cairn, just like I told Chanson. If we'd found it during the first few thousand years. . . . After fifty thousand, all we could see was that there had been a sheaf of reed paper inside. It was powder. We'll never know for sure what she wanted to tell us. . . . I'm sorry, Yelén."

26

It was snowing. From over the hill came shouts, occasional laughter. They were having a snowball fight.

W.W. Brierson crunched down the hillside, to the edge of the pines. Strange that with the world so empty, he would still want to be alone. Maybe not so strange. Their dormitory was a crowded place. No doubt there were others who'd left the snowballers, who walked beneath the pines and pretended this was a different time.

He found a big rock, clambered up, and dusted off a place to sit. From here he could see alpine glaciers disappearing into the clouds. Wil tapped at his data set, and thought. The human race had another chance. Dilip and a lot of other people really seemed to think he was responsible. Well, he'd solved the case. Without a doubt it was the biggest of his career. Even Billy Brierson had not imagined such a great adventure for his father. And the chief bad guy had been punished. Very definitely, Juan had been punished. . . .

Yelén had honored Marta's notions

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

about mercy; she had made that mercy the punishment itself. Juan was executed by a surfeit of life. He was marooned in real time, without shelter or tools or friends. Yet his was a different torture than Marta's—and perhaps the more terrible. Juan was left with a medical auton. He was free to live *as long as he wished.*

Juan outlived three autons. He lasted ten thousand years. He kept his purpose for nearly two thousand. Wil shook his head as he surveyed the report. If anyone had known that Chanson was into Penetration & Perversion, he would have been an instant suspect—on grounds of personality alone. Wil had known only one such specialist, his company's resident spook. The man was inhumanly patient and devious, but frightened at the same time. He spent so much time in deep connect, the paranoid necessities of defense systems leaked into his perception of the everyday world. Wil could only imagine the madhouse Penetration & Perversion had become by the late twenty-second. Juan made seven attempts to pervert the auton. One involved twelve hundred years of careful observation, timing the failure of various subsystems, maneuvering the auton into a position where he might take control and get transportation to resources in near space.

Yet Chanson never really had a prayer of success. Yelén had hardwired changes to the auton. Juan had none of the software he had stolen from USAF, Inc, and he was without processor support. His glib tongue and two thousand years of effort were not enough to set him free.

As the centuries passed and he had no luck with the auton, Juan spent more and more time trying to talk with Yelén and the other high-techs who occasionally looked into real time. He kept a journal many times longer than Marta's; he painted endless prose across the rocklands north of his home territory. None of it looked as interesting as Marta's diary. All Juan could talk of was his great message, the threat he saw in the stars. He went on spouting evidence —though after the first centuries it lost all connection with reality.

After five hundred years, his journal became at first irregular, then a decadely summary, then a dead letter. For three thousand years Juan lived without apparent goal, moving from cave to cave. He wore no clothes, he did no work. The auton protected him from local predators. When he did not hunt or farm, the auton brought him food. If the climate of the Eastern Straits had been less mild he would certainly have died. Yet to Wil it was still a miracle the man survived. Through all that time he had enough determination to keep on living. Della had been right. W.W. Brierson would not have lasted a tenth as long; a few centuries and he would have drifted into suicidal funk.

Juan drifted for three thousand years . . . and then his immortal paranoid soul found a new cause. It wasn't clear exactly what it was. He kept no journal; his conversations with the auton were limited to simple commands and incoherent mumbling. Yelén thought that Juan saw himself as somehow the creator of reality. He moved to the seashore. He built heavy baskets and used them to drag millions of loads of soil inland. The dredged shoreland became

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

a maze of channels. He piled the dirt on a rectangular mound that rose steadily through the centuries. That mound reminded Wil of the earthen pyramids the American Indians had left in Illinois. It had taken hundreds of people working over decades to build those. Juan's was the work of one man over millennia. If the climate had not been exceptionally dry and mild in his era, he could not have kept ahead of simple erosion.

Juan's new vision went beyond monuments. Apparently he thought to create an intelligent race. He persuaded the auton to extend its food gathering, to beach schools of fish in the maze he constructed on the shore. Soon there were hundreds of fishermonkeys living beneath his temple/pyramid. Through a perversion of its protection programs, he used the auton as an instrument of force: the best fish went to the monkeys who performed properly. The effect was small, but over centuries, the fishers at the East End had a different look. The majority were like the "W.W. Brierson" that had helped Marta. They carried rocks to the base of the pyramid. They sat for hours staring up at it.

The four thousand year effort was not enough to bring intelligence to the fishers. Yelén's report showed some tool use. Toward the end, they built a loose stone skirt around the lower part of the pyramid. But they were never the race of hod carriers that Chanson probably intended. It was Juan who continued to drag endless loads of dirt up to his temple, repairing erosion damage, adding ever higher towers to the topmost platform. At its greatest, the temple covered a rectangle two hundred meters by one hundred, and the top platform was thirty meters above the plain. Its spires crowded tall and spindly all about, more like termite towers or coral than human architecture. Through those last four thousand years, Juan's daily pattern was unchanged. He worked on his new race. He hauled dirt. Each evening, he walked round and round the intricate stairs of the pyramid, till finally he stood at the top, surveying the temple slaves who gathered on the plain before him.

Wil paged through Yelén's report. She had pictures of Juan during those last centuries. His face was blank of all expression, except at day's end —when he always laughed, three times. His every motion was a patterned thing, a reflex. Juan had become an insect, one whose hive spread through time instead of space.

Juan had found peace. He might have lasted forever if only the world had had the same stability. But the climate of the Eastern Straits entered a period of wet and storminess. The auton was programmed to provide minimum protection. In earlier millennia that would have been enough. But now Juan was inflexible. He would not retreat to the highland caves; he would not even come down from the temple during storms. He forbade the auton from approaching it during his nightly services.

Of course, Yelén had pictures of Juan's end. The auton was four klicks from the temple; Juan had long since destroyed all bugs. The wind-driven rain blurred and twisted the auton's view. This was just the latest of a series of storms that were tearing down the pyramid faster than Juan could maintain it. His towers and walls were like a child's sand castle melting in an ocean

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

tide. Juan did not notice. He stood on the slumped platform of his temple, and looked out upon the storm. Wil watched the wavery image raise its arms—just as Juan always did at day's end, just before he gave his strange laugh. Lightning struck all around, turning the storm darkness to actinic blue, showing Juan's slaves huddled by the thousands below him. The bolts marched across the fallen temple, striking what was left of the spires . . . striking Juan as he stood, arms still upraised to direct the show.

There was little more to Yelén's report. The fishermonkeys had been given a strong push toward intelligence. It was not enough. Biological evolution has no special tendency toward sapience; it heads blindly for local optima. In the case of the fishers, that was their dominance of the shallow waters. For a few hundred years, the race he'd bred still lived at the Eastern Straits, still brought rocks to line the stub of his pyramid, still watched through the evenings. But that was instinct without reward. In the end, they were as Juan had found them.

Wil cleared the display. He shivered —and not just from the cold. He would never forget Juan's crimes; he would never forget his long dying.

The snow had stopped. There was no more shouting from over the hill. Wil looked in surprise at the sunlight slanting through the trees behind him. He'd spent more than an hour looking at Yelén's report. Only now did he notice the cramps in his legs and the cold seeping up from the rock.

Wil tucked the data set under his arm and slipped off the rock. He still had time to enjoy the snow, the pines. It brought echoes of a winter just ten weeks old in his memory, the last days in Michigan before he'd flown to the coast on the Lindemann case. Only these snowfields were almost at the equator, and this world was in the middle of an ice-age.

The tropics had cooled. The jacaranda forests had shifted downslope, to the edge of the Inland Sea. But none of the continental ice sheets had reached farther south than the latitude forty-five. The snow around the site of Town Korolev was due to the altitude. Yelén figured the glaciers coming off the Indonesian Alps wouldn't get below the four thousand meter level. She claimed that, as ice-ages go, this one was average.

Wil walked a kilometer through the pines. A week before—as his body counted time —this had been the glazed crater of Town Korolev. So much destruction, and not a sign of it now. He climbed a ridgeline and watched the sunset gleaming red and gold across the white. Something hooted faintly against the breeze. Far to the north he could see where the jac forests hugged the sea. It was beautiful, but there were good reasons to leave this era. Some of the best ore fields were under ice now. Why cripple the new civilization when it was weakest? . . . And there was Della. She had lots of valuable equipment. They would give her at least a hundred thousand years to return.

Suddenly Wil felt very bleak. *Hell. I would give her a thousand times a hundred thousand.* But what good would it do? After that night with the dog-things, Wil hoped she had finally found herself. Without her, he could never have set up the double play against

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Chanson and Gerrault. A crooked smile came across his face. She had fooled both the killers into defeat. The plan was to force Gerrault to run, to chase him long enough to trick Juan. And it had worked! She had played the old, crazy Della so well. *Too well*. She had never returned. No one knew for sure what had happened; it was even conceivable she had died fighting Gerrault. More likely, some battle reflex had taken over. Even if the mood passed, she might pursue the other for unknown millennia. And if the mood didn't pass. . . .

Wil remembered the scarcely human thing she had been when he first saw her. Even with her computer-supported memories and all the other enhancements, that Della seemed very much like what Juan Chanson had become toward the end of his punishment. For all her talk of being tough, Della had nothing on Juan when it came to single-mindedness. How much of her life would she spend on this chase? He was terribly afraid she had volunteered for the same fate that had been forced on Juan.

Wil decided he didn't like the cold at all. He glanced at his data set. It showed the date as 17 March 2100; he still had not reset it. Somewhere in its memory were the notes about the stuff Virginia wanted him to bring back from the Coast. How much can happen in ten weeks; one must be flexible in these modern times. He turned away from the sunset and the silence, and headed back for the dormitory. He should be satisfied with this happy ending. The next few years would be tough, but he knew they could make it. Yelén had been friendly toward almost everyone the last few days. In the weeks before, she would never have thought of stopping in the middle of this glacial era just to give them a chance to look around.

The tropical twilight snapped down hard, faded quickly into night. When Wil came over the hill above the dorm, its lighted windows were like something out of a Michigan Christmas. Sometime early tomorrow morning, when they were snug in their beds, Santa Claus Yelén would bobble them up once more. Her sleigh had certainly had a bumpy landing, popping in and out of real time over the last sixty thousand years. Wil smiled at the crazy image.

Maybe this time they could stop for keeps.

That night was the last time Wil ever had the dream in blue. In most ways it was like the ones before. He was lying down, all breath exhausted from his lungs. *Goodbye, goodbye*. He cried and cried, but no sounds came. She sat beside him, holding his hand. Her face was Virginia's, and also Marta's. She smiled sadly, a smile that could not deny the truth they both knew. . . . *Goodbye, goodbye*. And then the pattern changed. She leaned toward him, snuggled her face against his cheek, just as Virginia used to do. She never spoke, and he couldn't tell if the thought was only his, or somehow comfort from her. *Someone still lives who has not said goodbye, someone who might like you very much.*

Dearest Wil, goodbye.

Brierson woke with a start, gasping for breath. He swung his feet out of bed and sat for a moment. His tiny room was bright with day, but he couldn't see outside; the window was completely

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

fogged over. It was very quiet; normally he could hear plenty of activity through the plastic walls. He got up, and stepped out into the hall; not a soul in sight. There was noise from downstairs, though. That's right: there was a big meeting scheduled first thing this morning. The fact that Yelén was willing to meet the low-techs at the dorm was more evidence that she had changed; she had not even demanded his presence. His sleeping late was a half-conscious test of his freedom. For a while he wanted to be a bystander. Managing the last meeting had been a bit . . . traumatic.

Wil padded down the hallway to the second floor washroom. For once, he had the place all to himself.

What a *weird* dream. Wil looked at his image in the washstand mirror. There was wetness around his eyes, but he was *smiling*. The dream in blue had always been a choking burden, something he must forcibly ignore. But this time it reassured him, even made him happy. He hummed as he washed up, his mind playing with the dream. Virginia had seemed so real. He could still feel her touch on his cheek. He knew now how much hidden anger he had felt at Virginia; he knew, because suddenly the anger was gone. It had cut deep that Virginia had not come after him. He'd told himself that she always intended to, that she was still gathering her resources when the Singularity overtook her. He hadn't believed the excuse; he'd seen what could happen to a personality over a century. But now—for no reason but a dream—he felt differently. Well, what if Della's explanation of the Singularity was correct? What if technology had

transcended the intelligible? What if minds had found immortality by growing forever past the human horizon? Why then, something that had been Virginia might still exist, might want to comfort him.

Wil suddenly realized he was washing his face for the second time. For a moment, he and his mirror image grinned sheepishly at each other, conspirators realizing the insanity of their scheme. If he wasn't careful, he'd be another Jason Mudge, complete with guardian angels and voices from beyond the grave. Still, Della said there was something like religion hiding at the end of her materialism.

A few minutes later he was walking down the side stairs, past the cafeteria. The voices from within were loud, but didn't sound angry. He hesitated, then turned away from the door. It might be fantasy, but he wanted to keep the mood of that dream as long as possible. It had been a long time since he'd started the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

day feeling so good. For the moment he really believed there was "someone who still lives, who might like you very much."

He walked out of the dorm, into daylight.

The building was surrounded by a perfect disk of white—the snow that had been brought through time with their bobble. The sun burned at the snow drifts, raising a sublimation fog all around him. Wil walked across the slush, through the brilliant mist. He stopped at the edge of the snow, and stared at the almost-jacarandas and less identifiable trees that grew all around. It was already a warm day. He stepped back a pace and enjoyed the cool coming off the snow. Except for the shape of some of the hills, the world was the same as before the battle. The glaciers were tamed again, lurked near faraway peaks. Across a ravine and a few hundred meters up a hillside, there was a separate plume of sublimation fog: the golden towers of Castle Korolev gleamed faint within it.

A shadow passed over him. "Wil!" He looked up as Tammy Robinson dropped out of the sky. She brought her platform to a low hover, just like when she came to invite the soot pushers to her father's party. She was even dressed in the same perfect white. She stood there a moment, looking down. "I wanted to see you again . . . before I go." She brought the platform all the way to earth, just beyond his toes. Now she was looking up at him. "Thank you, Wil. Gerrault and Chanson would've gotten us all, if it hadn't been for you. Now, I think we can all win." Her smile broadened. "Yelén has given me enough equipment to leave this era."

She was almost too perfect to look at. "You've given up on recruiting?"

"Nope. Yelén says I can come back in a hundred years, and any time after. With Gerrault's equipment and the zygotes, you can really succeed. Another century or two, and there'll be more people here than I could ever imagine. They won't feel beaten like they do now, and a good many will be bored with civilization. There will be dozens, maybe hundreds, who'll come with me. And they'll be people we won't have to support. That's more than Daddy ever hoped for." She paused a second, and then said quietly. "I hope you'll come with me, Wil."

"S-some of us have to stay in real time, or there'll be no civilization for you to raid, Tammy." He tried to smile.

"I know, I know. But a hundred years from now, when I come back . . . what about then?"

What about then? The Robinsons thought all mysteries could be known to those who watched long enough, waited long enough. But a flatworm could watch forever and still not understand the opera. Aloud, "Who knows how I'll feel in a hundred years, Tammy." He stopped and just stared at her for a second. "But if I don't come with you . . . and if you make it to the end of time . . . I hope you'll remember me to the Creator."

Tammy flinched, then realized he wasn't mocking her. "Okay. If you stay behind, I will." She put her hands on his shoulders and stood on tiptoe to kiss his lips. "See you later, Wil Brierson."

A few seconds later, Tammy was disappearing over the trees. *The one*

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

who still lives, the one who has not said goodbye? He thought not, but he had a hundred years to decide for sure.

Wil walked along the perimeter of the mist, intrigued by the way heat and cool battled at the edge of the snow. He circled the dorm, and found himself staring at the entrance. They were still at it in there. He grinned to himself, and started back. What the hell.

He was only partway to the entrance when the doors opened. Only one person stepped out. It was Yelén. She surveyed him without surprise. "Hah. I wondered how long you'd stay out here." As she came toward him, he looked for signs of anger in her pale slavic face. She caught his eye and smiled lopsidedly. "Don't worry. They didn't kick me out. And I'm not leaving in a huff. It's just that all the dickering is a little dull; they've practically got a commodity exchange going in there, splitting up all the stuff that survived our fighting. . . . Do you have a minute, Wil?"

He nodded, and followed her out of the chill, back the way he had come. "Have you thought: no matter how well things go, we'll still need police services? People really respect you. That's ninety percent of what made companies like Michigan State Police and Al's Protection Racket successful."

Brierson shook his head. "It sounds like the game we were playing before. A lot of the ungovs might want to hire me, but without threats from you, I can't imagine the governments tolerating the competition."

"Hey, I'm not looking for a cat's-paw. The fact is, Fraley and Dasgupta are in there right now, colluding on a common offer for your services."

Wil felt his jaw sag. *Fraley?* After all the years of hatred—"Steve would rather die than disgovern."

"A lot of his people did die," she said quietly. "A lot of the rest aren't taking orders anymore. Even Fraley has changed a little. Maybe it's fear, maybe it's guilt. It really shook him to see how easily one high-tech swindled him and perverted the Republic—even worse, to learn that Chanson did it just to have a thirty second diversion available when he grabbed for our systems."

Yelén laughed. "My advice is to take the job while they still think it's tough. After a couple years, there'll be competition; I bet you won't be able to make a living off your fees."

"Hmm. You think things are going to be that tame?"

"I really do, Wil. The high-tech monsters are dead. The governments may linger on, but in name only. We lost a lot in the war—parts of our technology may fall to a nineteenth century level—but with Gerrault's med equipment and zygotes, we're better off than before. The problem with the women has disappeared. They can have the kids they want, but they won't have to be nonstop baby factories. You should have seen the meeting. There are lots of serious couples now. Gail and Dilip asked me to *marry* them! 'For old times sake.' They said I had been like the captain of a ship to them. What crazy, crazy people." She shook her head, but her smile was very proud. These might be the first low-techs to show gratitude for what she and Marta had done. "I'll

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

tell you how confident I am: I'm not forcing anyone to stay in this era. If they have a bobbler, they can take off. I don't think anyone will. It's a bit too obvious that if we can't make it now, we never will."

"Monica might."

"That's different. But don't be too sure even with her; she's been lying to herself for a long time. I'm going to ask her to stay." Yelén's smile was gentle; two weeks ago she would have been scornful. With Gerrault and Chanson gone, a great weight had been lifted from her soul, and Wil could see what—beyond competence and loyalty—Marta had loved in her.

Yelén looked at her feet. "There's another reason I ducked out of the meeting early. I wanted to apologize. After I read Marta's diary, I felt like killing you. But I knew I needed you—Marta didn't have to tell me that. And the more I depended on you, the more you saw things I had not . . . the more I hated you.

"Now I know the truth. I'm ashamed. After working with you, I should have seen through Marta's trick myself." Abruptly she stuck out her hand. Brierson grasped it, and they shook. "Thanks, Wil."

The one who still lives, the one who has not said goodbye? No. But a friend for the years to come.

Behind her, a flier. "Time for me to get back to the house." She jerked a thumb at Castle Korolev.

"One last thing," she said. "If things are as slow as I think, you might want to diversify. . . . Give Della a hand."

"*Della's back?* H-How long? I mean—"

"She's been in solar space about a thousand years; we were waiting to find the best time to stop. The chase took one hundred thousand years. I don't know how much lifetime she spent." She didn't seem much concerned about the last issue. "You want to talk to her? I think you could do each other good."

"Where —"

"She was with me, at the meeting. But you don't have to go inside. You've been set up, Wil. Each of us—Tammy, me, Della—wanted to talk to you alone. Say the word, and she'll be out here."

"Okay. Yes!"

Yelén laughed. He was scarcely aware of her walking to the flier. He started back to the dorm. Della had made it. However many years she had lived in the dark, she had not died there. And even if she was the creature from before, even if she was like Juan Chanson at his ending, Wil could still try to help. He couldn't take his eyes off the doorway.

The doors opened. She was wearing a jumpsuit, midnight black, the same color as her short cut hair. Her face was expressionless as she came down the steps and walked toward him. Then she smiled. "Hi, Wil. I'm back . . . to stay."

The one who still lives, the one who has not said goodbye.

Afterword

The author's afterword: that's where he explains what he was trying to say with the previous 100,000 words, right? Well, I'll try to avoid that. Basically, I have an apology and a prediction.

The apology is for the unrealistically slow rate of technological growth pre-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

dicted. Part of that is reasonable, I suppose. A general war, like the one I put in 1997, can be used to postpone progress anywhere from ten years to forever. But what about after the recovery? I show artificial intelligence and intelligence amplification proceeding at what I suspect is a snail's pace. Sorry. I just needed civilization to last long enough to hang a plot on it.

And of course, it seems very unlikely that the Singularity would be a clean vanishing of the human race. (On the other hand, such a vanishing is the time-like analog of the silence we find all across the sky.)

From now to 2000 (and then 2001), the Jason Mudges are going to be coming out of the woodwork, their predictions steadily more clamorous. It's an ironic accident of the calendar that all this religious interest in transcendental events should be mixed with the objective evidence that we're falling into a technological singularity. So, the prediction: If we don't have that general war, then it's *you*, not Della and Wil, who will understand the Singularity in the only possible way—by living through it.

—San Diego

1983–1985 ■

CORRECTION

● The first installment of *Marooned in Real Time* (*Analog*, May 1986) carried half a page of mixed-up type. From the last sentence on page 52 until the last line on page 53, inclusive, it should read as follows:

. . . For a moment, she looked past him, perhaps at the watercolor, perhaps beyond. Then the expressionless gaze returned to her face. "I think it's time I rejoined the human race."

5

Some fifty thousand years later, all that was left of the only world empire in history, the Peace Authority, returned to normal time. They were welcomed by Korolev autons, and discouraged from interfering with the bobbles on the south side of the Inland Sea. They had three months to consider their new circumstances before those bobbles burst.

What Marta and Yelén had worked so long for was ready to begin:

Thousands of tonnes of equipment were given to the low-techs along with farms, factories, mines. The gifts were to individuals, supposedly based on their expertise back in civilization. The Dasgupta brothers received two vanloads of communication equipment. To Wil's amazement, they immediately traded the gear to an NM signal officer—for a thousand hectare farm. And Korolev didn't object. She did point out which equipment was likely to fail first, and provide databases to those who wanted to plan for the future.

Many of the ungoverned low-techs loved it: survival with profit. Within weeks they had a thousand schemes for combining high-tech equipment with primitive production lines. Both would co-exist for decades, with the failing high-tech restricted to a smaller and smaller role. In the end there would be a viable infrastructure.

The governments were not so pleased. Both Peacers and NMs were heavily armed, but as long as Korolev stood guard over the Inland Sea, all that . . .(text continues on page 54)

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

LICENSED TO JN2.ORG
ELECTRONIC REPRODUCTION PROHIBITED

It seems like a good idea at the time, a tremendous idea, in fact. It becomes a crusade that everybody, every nation, that is, wants to join. After technology reaches a stage where a person might successfully be electronically disassembled into a coherent stream of signals of precise sequential exactitude, and transportation of a body from one place to another might be accomplished with great rapidity between suitably equipped sending and receiving offices, it seems an obvious next step. Individual Stations can be launched, to escape terrestrial restraint, to be sent forth to the stars, compact unmanned spacecraft designed explicitly to search out planetary systems that might contain elements suited to the human condition.

Jack Wodhams

STATION 2152

There are, of course, both advantages and drawbacks to sending someone else to do your work for you.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Such exploratory craft enjoy an era of international popularity. Initially many are financed by various consortiums, but soon governments are vying with each other to establish an inalienable right to an assured percentage of the action. At this time visions of Nordicol, Indopop, Nouveau Cuba, Cosmi-Canada, and suchlike, inspire the launching of numberless Transrec Station Vehicles to virtually every corner of the Galaxy. Hundreds of them. Into thousands of them, before the spate turns around and starts to ebb.

One reason for a steady waning of enthusiasm is lack of reply from any of the first fifty or so Transrec Stations, which, after an elapse of a calculated period of time, fail to send signal of any landfall at all suitable.

There is great debate, and argument, upon earlier quality-control, and there are many who speculate upon the problematic malfunction of one or more instruments aboard the assorted vehicles. There is so much that can go wrong. The planetary detectors can be out of whack; any one of the diagnostic sensors can be faulty; the automatic assessment mechanism can have had a breakdown. Also, of course, the landing of the vehicle can have been disastrously inexact. It can even have forgotten its purpose, and be sitting mindlessly waiting to turn itself on.

The passage of time does little to bolster the morale of those who doggedly continue to support the program.

They are fortunate that organized waste can become a critical feature in global economics. The expenditure of time and labor upon unproductive activities, and upon productive activities that produce items that premeditatedly might be swiftly junked, is a vital cost factor that ensures the employment of half the work force. From the thousands of dabs of mustard that get washed from plates down the drain, scrap bread and food of all kinds, through golf-balls and cigarettes to newsprint of all sorts, and cans and packets and bottles, and further to munitions and military maneuvers, the creation of goods that have to be burnt, buried, or blown up, provides occupation for millions.

Gigantic outlay upon such useless and infeasible objects as nuclear weaponry give us proof that waste is a viable commodity that can be crucial to keeping those dollars and rubles in circulation.

Put an end to waste, and it is not only the garbage-collector who will be thrown on the dole, no sir, not by a long way. In the spirit of waste were the Pyramids built. Where would the money go if it were not so spent? Indeed, if such extravagantly grandiose plans did not exist, would the money exist either?

For a prosperous society the G.N.W., or Gross National Waste, is more essentially relevant than the G.N.P. The higher the G.N.W., the quicker the cash turnover, the more a demand for waste is created, the more firms can buy into a piece of the action to add to the frivolity of the disposable, hiring more hands, lowering the rate of joblessness, and allowing more people to buy their own homes, cars, and their own share of junk.

It should be significant, surely, that the richer the nation, the more profligate it is in its exercises, then the larger its garbage can.

Which must lead us to ask: Does the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

garbage can follow wealth? Or does wealth follow the garbage can?

This, however, is a digression.

The dreams and ambitions for TSVs steadily founder upon a lack of response. Of the large number sent forth, one has yet to notify its source of a suitable contact. There are those who still stubbornly cling to hope, but more and more there are recriminations. Critics who decry the waste, who would divert the waste to some more useful philanthropy without realizing the true philanthropy of magnificent waste, would close down the TSV project altogether.

The TSV project, though, by now employs so many people, so advantageously trains individuals in so many disciplines, provides such a fertile field for technological experimentation and innovation with complex and valuable spin-offs into the public sector that, despite the violence of some self-proclaimed "underprivileged" agitators, no government can afford to fulfill any promise to abandon and extricate itself from the TSV enterprise.

Of course, one day it has to happen. A TSV Station, one dispatched only ten years previously, Number 2152, startles those persons who have been enjoying the sinecure of a position monitoring the receptors at the huge Galaxy/International TSV Receiving Flexus by clearly registering that it has arrived somewhere.

Strange what a shock it can be. Had it happened in earlier years, in the flush of brilliantly conceived, ultimately extremely low-cost expansionism, the excitement would have been exhilarating. Now, though, after so many decades of negative, those in charge of Trans-Reception Management are flummoxed to have to rediscover old skills, to revive prescribed procedures, to come to terms with a galvanizing resuscitation of their benignly comatose institution. One tiny needle spark and the staff in charge are thrown into disarray, to have a tendency to run around like sodium on a soggy sheet, to be inordinately dismayed at their lack of preparation to deal with something that they have drawn salary for so long precisely to be prepared for.

Magazines are swept aside, playing-cards hurled into the backs of drawers, long-standing recreational facilities hastily dismantled, beds and furniture cleared from established semi-permanent accommodation encroachments, and urgent warnings fired off to sundry administrators, representatives of their governments, who are mostly absent upon extended vacation at this time.

Contact! That a TSV has actually and at last made a contact electrifies the whole world. There are a few skeptics who claim that it is a fix, but such folk are justly discounted. The scandalous chaos at the G/I TSV R.P. can only serve to convince populations that the contact is genuine.

The manifest incompetence, nay, negligence of the management in charge is outrageous, and the cry for official enquiries becomes so loud that it virtually eclipses the importance of the contact for a period. So that among the upper echelon there are, for a spell, quite a few dignified resignations, while many in the lower ranks are forced to accept an early retirement, or are bluntly sacked, to be deprived the fruit of their long labors.

Such is always the way. Devote a

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

lifetime to something that most people jeer at as being pointless, weather their scorn—but what happens when paydirt is struck? Oh yes, it's a different story then. *Then* everybody wants to elbow in, to try and take over.

Mischa is a survivor, deservedly so. She is one of the few who have kept faith over the years. She is one of the few who has kept her hope alive.

Mischa has made sacrifices, has foresworn marriage in a determination to pursue this project to a conclusion that *has* to know success. True, she has not served as long as some of the older hands, has only twelve years under her belt. The key thing, though, is that after twelve years she remains caught up and singularly dedicated to her work.

She begins at G/I TSV R.P. at age seventeen, as a Junior Secretary-Recorder for Sultan Salamud In Ibrahim, the Representative for Malaysia. The Sultan suffers not from paranoia and is inclined to be generous in delegating authority during absences that tend to become more prolonged the more capable his lackeys prove.

Not winning the heart of the conscientious Mischa, the Sultan contents himself with the charming and attractive Madelaine Cortierre, a French woman who acts as his Senior Secretary-Recorder. Mostly the Sultan prefers to do his dictating to Madelaine in the Bahamas, and other such places as become congenial in season. Under such circumstances Mischa has been afforded opportunity and responsibility that she has no reluctance to accept.

Through the Sultan's magnanimous default, Mischa steadily and in time has assumed the authority of the Malaysian representation, one of a very small band maintaining a keen continuing interest in the project.

Now she has fear. She is afraid that the Sultan's sudden withdrawal on the grounds of ill-health will abruptly terminate her career, to snatch this glorious plum from her mouth.

In communications Mischa pleads with the Sultan to stay on, offering to back him, to place all the knowledge she has at her fingertips at his disposal. The Sultan, appreciating her value as a knowledgeable stand-in who might justify his past position and who has eagerly carried any can on his behalf, graciously, as his last official act, promotes Mischa, and nominates her to act as a Full Attaché and Leading Malaysian Spokesperson in Cosmic TSV matters, and Interplanetary Contacts in particular.

This is the way things go sometimes.

So Mischa is not swept away, but is to have a voice against the new brooms that would brush in to pick up the prizes of exploitation after no record of praying at all. It is Mischa who tells a meeting flatly, "We cannot simply shoot people willy-nilly one after the other through this live TSV, just to hope for the best." She sniffs, "There *is* a prescribed procedure."

"The prescribed procedure sends only one person, one technician—*one!*" Jiva Houte, the newly-appointed representative for Singapore is disparaging. "To send just one is far to self-limiting."

"I agree," Senscrit Lio, the recent replacement for the Indonesian delegate says. "Our investment over the years has been tremendous. Now that finally a contact has been made, we should take

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

one of the hard-core faithful who gets full advantage of it with the minimum of delay."

Mischa battles to avoid being intimidated. "The investment over the years has not been so great, mostly for simple maintenance. The greatest cost has been for the Director."

"Necessary, necessary," Jiva Houte dismisses brusquely. "Now that we have a link we need to take a firmly pragmatic approach, to maximally implement its potential."

Mischa is aghast at this proposed blithe flouting of laid-down long-standing rules. "We cannot send a whole batch of people blindly into a totally unknown situation. The steps for a proper evaluation have to be taken first."

"This link, Miz Trebbly, is of unprecedented significance," Senscrit Lio insists condescendingly. "It has been so long, we have been so patient. And now that we, *our* consortium, has been blessed with a first contact, we have an obligation to seize our opportunity with courage and boldness."

"It has caught the imagination of the whole world," Jiva Houte supplements. "There are hundreds of volunteers coming forward offering to be sent, clamoring to be sent."

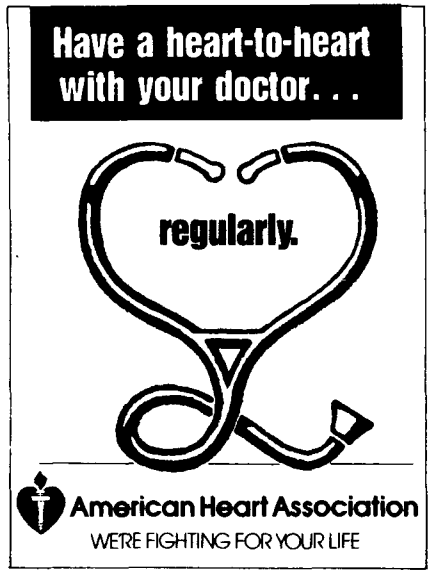
"Exactly," Senscrit notes. "We are already under pressure to share our rightful priority with less fortunate nations. We cannot delay. We have to make a decision. World opinion is most anxious to see this facility put to use."

"Yeah," says Slag Knacker, the consortium's Australian component, which shares with Thailand's Wiwi Ulalla a minority 7½% interest against Malaysia's 45%, and 20% each for the other two, "since it came in everybody's been running around like headless chooks. We can't just keep looking at it. Everybody wants to know. We've got to send *somebody*, otherwise those blasted Yankees, or the EuroCom mob, will move in and take it off us."

"I agree," Senscrit Lio repeats. "They've given this business excessive publicity. They're screaming for action."

"If it had been one of *their* hundreds, we know that *they* wouldn't have been prepared, either," Jiva Houte remarks bitterly. "It's been less than a week, yet already they're howling to know what we're waiting for."

"*Nobody* has kept his list of volunteers updated," Mischa proclaims, her jaw jutting at the perversity of it all. "There's no technician who's kept his name at the top of the pile. It was



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

thought that this could be resolved if and when the need arose."

"And it has arisen, and we have nobody," Senscrit says, marring his blandness with a touch of asperity. "We have plenty of ordinary volunteers, from farmers through to doctors and lawyers. I say we should pick an assorted couple dozen, and send them straight away."

"Perhaps directly to their deaths?" Mischa cries, appalled. "There *has* to be an exploratory venture first. Someone *must* prove the system, the prospects, before any settlers can be sent."

"It should only cost us another day or so," Wiwi Ulalla suggests tentatively.

"And the rest," Senscrit Lio chides with a smile. "To pick one person to have the privilege will be more time-consuming than picking twenty or so."

"But the right man," Slag Knacker observes shrewdly, "can become a focus. It will be instant fame. If we can send somebody the rest can accept, it'll kill the jealousy, and a lot of the panic, all in one go."

"It needs to be a technician," Mischa objects, "someone capable of thoroughly checking out the unit at the other end."

"Someone who can read a repair-manual will do," Slag Knacker says. Without waiting to be asked, he adds, "I was thinking of somebody like Muncey Fartlebrow."

"Muncey Fartlebrow?"

Mischa's lower lip protrudes. "Muncey Fartlebrow? He's nothing but a show-off and a playboy."

"He is a bit, now he is," Slag Knacker admits, "but he did start off as an engineer. He's got the background."

"Building bridges in the Amazon," Mischa scorns, "until he met that Tick-Tox Computer heiress. And then," Mischa stretches her neck, purses her lips, and mimics, "the Lady Felicity, fourth cousin, nine times removed from the Queen. Pah! He's got himself into the polo set, and *now* they say he's chasing that tride star, Kazy Kuddels."

"Yes, I know, and that's the point," Slag Knacker persists calmly, giving Wiwi Ululla a glance to check that she is paying attention to his performance. "He is a celebrity. He is still young, and he is fit, and he is handsome, and he climbs mountains. If we sent *him* ahead for twenty-four hours to check the place out, the whole world would wait, no argument."

"You have a point there, Slag," Jiva Houte approves.

Senscrit Lio muses. "Yes, indeed. His father was Irish-American, but his mother was, of course, the Philippines beauty, Oso Ososo. And *her* father was *our* revered General Ossosey, banished from Indonesia for his fight against corruption."

"And her mother originally came from Brunei," Jiva Houte notes.

Mischa is swiftly exasperated. "We all know his history," she snaps. "He gets himself into the society pages often enough. And that's what he is, a dilettante. He is quite the most unsuitable person to think of sending."

"No," Senscrit Lio demurs, more and more images becoming clear to his eye, "no, to the contrary, I think he might be ideal. He is a cosmopolite, with sufficient regional connections to

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

satisfy *our* constituents, with a most useful Euro-U.S. link that will allay much of the criticism from *that* area."

"I think it's an excellent suggestion," Jiva Houte endorses.

Mischa is horrified. "I think it's a terrible suggestion. Such a man is totally the wrong person."

"No, Miz Trebbly, no. He is exactly what we need," Senscrit Lio reasons sensibly. "We have not the time to build such a notable character. He is so well known already that the very mention of his name will suffice to be immediately informative. As I see it, there is only one problem."

"And what's that?" Jiva Houte obligingly asks.

"Can we get him quickly, and will he agree to go?" Senscrit Lio enquires.

"He'd agree to go, he'd jump at it," Mischa says tartly. "To get his smirking face plastered across the world, you wouldn't have to ask him twice." Her nostrils dilate. "But you have another problem."

"Oh? And what's that?"

"My majority vote," Mischa says succinctly. "My forty-five points are against him, and so are Wiwi's seven-and-a-half. Right, Wiwi?"

The petite Wiwi Ulalla shows a tongue-tip. All eyes swing to regard her. It makes her feel uncomfortable. She looks to Slag Knacker particularly, and is encouraged by his wink. She smiles apologetically at Mischa. Her delightfully soft, huskily accented voice says, "Thailand vote is going for Mister Fartlebrow."

Women! Mischa feels betrayed. She protests, but finds herself outmaneuvered and now largely ignored. In the face of the unanimity of her fellow members she can only sit back and grind her teeth in aggravation.

"Does anybody know where Muncey Fartlebrow is just now?"

"Yes," Slag Knacker offers. "Kazy Kuddels is making a tride in Kiwiland, something to do with the Scottish Rebellion and Bonnie Prince Charlie. I've had a good whisper that Muncey is in Christchurch at the moment. Would you like me to try and get him on the viewer? . . ."

Mischa can do nothing. It makes her seethe to feel so helpless. She has more years of service than the rest of them put together. Individually she has more clout than any one of them. Plus, dammit, she is more qualified to make this decision than anybody. Democracy. Johnnie-come-latelies. It makes her furious to be sidelined and able to do nothing.

Wiwi is a weakling. That damned grinning Aussie has got to her. Blast!

Muncey Fartlebrow is available. He is as easy to contact as though he might be expecting such a call. Mischa sees the face on the holopho, tanned, blue eyes, carelessly loose yellow-blond hair, white even teeth smiling, sickening.

Mischa cannot stand it. She *knows* Muncey will accept. Unable to bear involvement in contract negotiations after her shocked remonstration over the offered sum has been overridden, Mischa in a huff gathers her belongings and quits the head of the table. She cannot take part in such a nauseously importuning discussion.

Talking to such a famous person live on the holopho, the rest hardly notice her departure.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

* * *

Everything goes much as Slag Knacker has predicted. Mischa refuses to acknowledge the success of the ploy. It makes her ill to see the publicity that Muncey attracts, the hero worship. Countless numbers of foolish young women send him their picture, flowers, other gifts, along with begging pleas to be allowed to go with him.

The media love it, the world-wide vigils, and truly the choice stills criticism and buys time that the preparation for Muncey Fartlebrow's departure might be maximally touted. First man to a new world, a completely unknown world. The lone adventurer. It is marvelous stuff, historical in every sense of the word.

No one listens to Mischa. Mischa is a nobody, a minority of one.

When the time comes for Muncey Fartlebrow to enter the special SEA Transmitting Bay, surrounded by the attendance of those who have paid highly for the exclusive privilege, Mischa finds herself almsost unable to watch. Mischa is not comforted that the SEA Consortium has even shown a profit on the deal.

Mischa sees Muncey's handsome face acknowledging the grave danger ahead with a light smile. She sees the Lady Felicity in attendance, bravely beaming against rumors of an impending divorce. The voluptuous Kazy Kuddels is also nearby, plus this year's Miss World, the dazzling Miss Portugal, and the splendidly leggy Lorrie Laroy, leading dancer and chanteuse from the smash Broadway hit, Liberty Doo-Dah.

It all makes Mischa want to throw up. *She* is right here, but nobody pays any attention to *her*, to ask *her* opinion. She almost hopes for a malfunction. To her credit she immediately quells such a disastrously uncharitable wish and, in contrition as a penance, grudgingly adds her silent prayers for the wellbeing of Muncey Fartlebrow on his upcoming epic journey.

Muncey's personal kit is sent on ahead, and is signaled unexceptionally arrived. Muncey himself discreetly strips, and zipics relay the image of his well-proportioned upper torso to all parts of the world, to bring sighs from so many anxious breasts, from schoolgirls through to aged grandmothers. Mischa winces in distaste at the gross exhibitionism.

Then all is ready.

Muncey coolly lies down on the scanpan.

The upper screen descends, hovers above the fine chest. Muncey is not even breathing hard.

Dramatic moments of excrutiating suspense.

Then a whir, and a hum, and suddenly, blip! from top to bottom in an instant, Muncey Fartlebrow is sequentially disintegrated, to vanish abruptly.

Although this sight is not unfamiliar—it is a common form of conveyance transworld, to the Moon, Mars, and other points in the solar system, mostly the man-made satellite habitats—it in this instance holds a portent of unimaginable magnitude. Will the instanteneity of transference truly be maintained over such a huge distance?

There is a breathless wait for the return of an indication of safe arrival. When it comes after a nail-biting 4.27 minutes, the entire complex erupts in one mighty cheer. Mischa alone winces

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

a scant elation. *He* would get through. *His* kind has all the luck, never seems able to put a foot wrong.

When Muncey Fartlebrow disobeys the procedural rules, Mischa knows that he will get away with this, too. She protests, "He is supposed to spend his first five hours inside the TSV, thoroughly checking it out."

Nobody listens. They all seem to wear the same small humoring smiles. One says, "He's run the atmospheric tests, and the stuff's more pure than what *we're* breathing."

"That's no reason to dispense with his protective suiting, to walk straight out," Mischa complains agrily. "That's foolish. He should do first things first!"

"He is to come back in twenty-four hours," Jiva Houte says. "He wants to bring back the best impression of the environment that he can."

"But *we* want to know if it's safe to use!" Mischa argues. "The equipment should come first. After such a journey, *anything* could be in a dangerous condition."

"He is an adventurer, Miz Trebbly." Senscrit Lio seeks to placate amiably. "The fiddly technical stuff is not for him. With a whole new world at his feet, you cannot expect a man of such vitality to plod through some wearisome routine with buttons and switches and recorders."

"It needs to be *done!*" Mischa's fists clench. "It's *got* to be done. *Somebody* has to do it before any number can be sent."

"Certainly," Senscrit Lio concurs, "and somebody will—after Muncey Fartlebrow comes back. It's a job for a trained technician. Muncey does things his own way, and, really, we have no choice but to give him rein."

Mischa frets at such a blasé attitude. Fartlebrow is doing no *work*. Five hours of thorough checking of the long-exposed TSV. A snuze pill to encourage eight hours sleep. Then, all being well, suiting up to venture forth, to examine the landing-site if it is considered safe to do so, to collect samples of life, if any, in the immediate vicinity. A full day's work. Finally, when the time is up, to return personally, to be decontaminated, intensely screened medically, and to submit first-hand impressions.

Fartlebrow heeds none of this. Pigheaded, conceited, so damned self-assured, he simply lets it be known that he is going out to take a look, and apparently this is what he does, for he does not reply to a summons to keep in regular touch. It makes Mischa fume. It is no help that the others seem resigned to be philosophical.

Thwarted at every turn, Mischa has about as much as she can take. In a pique, she renounces the Plexus and goes home, refusing any further to be part of such an insouciantly conducted enterprise.

After 24 hours Muncey Fartlebrow fails to report in.

After 28 hours Mischa at last receives an anticipated call at home. She has been determined to wait for this plea for her presence. *Now* she can return to the Plexus.

"We shall have to send somebody else, I thought that should have been obvious," Mischa says coolly. "A

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

proper technician, as we should have sent in the first place."

"Yes." It is getting on for 30 hours that Muncey Fartlebrow has been silent, and Senscrit Lio's smile has become somewhat forced. "But there aren't any."

"What?" Mischa's eyebrows arch. "We can pick one of the volunteers, surely?"

"Miz Trebbly," Jiva Houte puts in, "this is Muncey Fartlebrow we're talking about, a very strong, fit, and capable man. He stepped out onto the planet, and hasn't been heard from since."

Slag Knacker grunts, "His last message said he'd be right back. He couldn't have gone far away, not on foot."

"He had a flash and a slicer, and bean-bombs, so he was well armed," Jiva Houte adds dubiously, "but just like that," he snaps his fingers, "he disappears."

"He is a personality, Miz Trebbly, a man of courage. That *he* should get lost makes lesser mortals think twice about following in his footsteps." Senscrit Lio smiles, "Do you see what I mean?"

"The volunteers are no longer volunteering?"

Jiva Houte sighs. "It seems contagious. One retracts, and then so does the next, asking why, and so on."

"Surely there is *some* technician willing to go ahead, to do the job that Fartlebrow should have done in the first place?"

"They're uniformly begging off," Slag Knacker says disgustedly. "The whole mob are gutless. There's no volunteers for anything."

"If we'd sent a technician in the first instance," Mischa cannot help rubbing, "something like this would have been avoided. Common sense should tell us the need for a very careful preliminary appraisal."

"Yeah, yeah," Slag Knacker grouches, "you were right and we were wrong. But what's done is done. Now everybody's looking to *us* to see what we're going to do next. They were all ready to cheer us on, but now the ratbags are passing all the buck onto us."

"They want to know what's happened to Muncey Fartlebrow, especially his wife and a few others," Jiva Houte says. "They're not wasting much time starting to blame us for carelessness."

"So they should. You *have* been careless," Mischa tells them warmly. "We should have stuck to the prescribed formula."

"But it's too late now, isn't it?" Slag Knacker snarls. "Now we've got to try and find somebody else. We've got to send *somebody*, somebody *responsible*. Not just a lousy technician, but someone . . . representative. To show that we're taking this thing very seriously."

Mischa blinks. She looks from one to the other of them, to have a trickle of ice go down her spine as she discovers that *they* are all looking at *her*. "*Me?* No way. No, sir," she shakes her head, "if you're thinking *I* might volunteer, forget it. No way. God, you'd have a nerve, wouldn't you? Me? Ha-ha. No, this is *your* problem. *You* created it, not me."

"We agree," Senscrit Lio grants, "we *were* at fault. We should have listened to your more seasoned advice."

"You *are* more knowledgeable on the subject than we are, after all," Jiva

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Houte supports, "have so many of the factors at your fingertips."

"And you are the senior representative of our consortium," Slag Knacker says tersely, "with forty-five percent of the vote. As the most authoratative person here, it is your duty to put yourself forward as the leading investigator into the circumstances of Muncey Fartlebrow's disappearance."

"None of the rest of us is really qualified to go," Jiva Houte apologizes, "and the credibility of the system is at stake. The link is still extremely important, and needs to be shown as still workable."

"I think a show, a bold show, is what is needed. Someone to again use the link, to occupy the TSV, which *is* safe, because he reported from there no problem." Senscrit clears his throat, "C'ha, someone to check out the TSV, look for clues, but not necessarily to venture outside. To stay for a few hours only, in constant contact, to assure us, the world, that our TSV is functional, viable, and secure."

"You wouldn't have to look for Muncey," Slag Knacker says. "You'll just go there, sound out our TSV, take a few scans, maybe, and then come back."

Their gall renders Mischa speechless. With round eyes she gazes at Wiwi Ulalla, who bites her lip, before saying, "You're the only one who knows what to do, Mischa."

It is numbing. It is too incredible.

Mischa argues, yet in some crazy, very unfair way, she can comprehend that they are right. It is all so unjust, and their concession to her importance is a patently self-serving device that she cannot fail to recognize. She *is* the senior member, she *did* in public go along with the majority, she *does* have the technical expertise to operate a TSV rundown, she *is*, as the representative senior partner, the one in the chair, the spokesperson, the one to be shoved up front to answer the questions.

The swine. They stand firm against her appeals, and bitterly Mischa becomes forced to capitulate.

It is so unreal, so inequitable an imposition, that Mischa can only marvel at her own ultimate compliance. Her opinion of human nature is so threatened that she can contrarily come to accept the role, to prove savagely that *somebody* around here has stomach.

Muncey Fartlebrow is now 36 hours gone without contact. Mischa Trebbly is got ready to follow his path. She is afraid, but she is even more sick of her so-called partners. Nothing but disappointment from so many high hopes. She can even entertain half a wish that she might fly off into the void, to be vaporized right out of this debacle altogether.

Her personal equipment is sent on ahead.

Mischa lies naked on the scan-pan, and waits.

Very shortly there is a whir, and a hum, and zip! her being is instantaneously sped to Station 2152.

Mischa does things literally by the book.

Station 2152 appears to be in very good condition, but she goes through every item, testing and ticking, making sure that each and every part of the unit is in proper and correct working order.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

She does some outside scans to send back in her half-hourly reports, but sees no sign of Muncey Fartlebrow, or what might have happened to him.

Station 2152 seems to be well set in a glade, very green, with a lush, forest-looking scene a bare 100 meters away. Between puffs of very white cloud the sky is, yes? perhaps a deeper blue than at home. The felt similarities cannot help but quicken the pulse. The yellow sun is still rising, so it is morning. The .0016 extra gravity is scarcely noticeable. The outside temperature climbs to a comfortable 22°C.

After sending off her fifth report, Mischa has a meal, as stipulated in the regulations. All is well. Everything is under control. Most of her tension has left her. The routine helpfully keeps her occupied.

She encounters nothing untoward in Station 2152. She completes her tasks before the five-hour deadline. She has hopes that Fartlebrow will reappear, that she might give him a piece of her mind, but after over 43 hours on the planet, most of them making no contact at all, Muncey gives no sign of his presence.

Five hours. It is sufficient. Mischa is entitled, is prescribed, to return. She has done her part, has done enough to shame them all.

She looks outside. It *does* look good. Out there somewhere is Muncey Fartlebrow. Rash fool. Stupidly over-confident smart-ass. Mischa wonders where he is.

Mischa has twenty minutes before her five-hour stint is up. On a whim, curious, she decides to step outside. Just to step outside, this is all.

She signals her intent and is strangely, grimly, pleased that no one can stop her.

With fast-beating heart, a second-degree face-mask to filter her air, and a slicer, Mischa trips the small airlock and passes through, to go stand on the ground outside Station 2152.

Her own daring makes her dizzy. Twitchy, she checks all ways. The TSV has registered animal and flighted life, one or two of medium size.

Warily Mischa circles Station 2152, gathering no samples. She encounters no mishap. Emboldened, she circles it again, this time dutifully taking snips of plant life to send back for analysis.

She remains extremely watchful, but this time her head is not so stringently held up, and she sees a footprint. It makes her feel like Robinson Crusoe. She looks to where the toe points. Yes, there is a break, what could be a low bluff, a vantage point. Fartlebrow could well have headed for such a look-out.

Mischa swallows painfully. She looks up. She fears a great bird to descend upon her from the sky. She looks at the footprint again. She shivers.

Hastily Mischa collects more samples, and then once more seeks security inside Station 2152.

She sends the samples back and, as an afterthought, says she is going out for more. She does not know why she says this, it comes without intent from the top of her head. She spends some minutes thereafter wondering. To realize that she is going to do something unwise, even distasteful.

She is going to the bluff, has to, to at least make *some* attempt to look for Fartlebrow. She will collect more samples. Then, after she has had a look, she

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

can return home with an easy conscience.

It is fateful. Mischa is not an adventurer. Mischa is not foolhardy. It makes her light-headed, to exit Station 2152 again, leaving it, knowing that she is going to risk walking half a kilometer, mostly in the open. Just to see what Muncey Fartlebrow saw. Saw, and never came back.

She walks, stiffly, part-crouched, slicer tenaciously gripped in her fists, her eyes ceaselessly darting about, up and back, sweat running down to her chin behind her mask, trickling down her neck.

She pauses frequently, to take another fresh sample to justify her walk; so silly, but salvage, fatuous really.

At last she reaches the rise. It is much broader than she had thought. It *is* a cliff, and below is a breathtaking view of an expansive tree-studded valley, rolling away to distant hills. She looks and is beguiled. It is a truly magnificent scene.

When the cry, "Hey!" assails her ears she is so startled that she almost has a seizure. She gulps, spins, quests high and about, slicer up and ready.

"Hey! Down here!"

Her ears swing her head to pinpoint the sound.

"Hup!" She goggles, unbelieving. A man. She peers—not, it can't be, can it? Not Mister Fartlebrow? Even at this distance he looks too scruffy, too unkempt, to be that dashing blade.

"Don't come too close to the edge!" the man bawls. "Get a rope!"

Mischa is astonished to discern that it *is* Fartlebrow. He appears lodged upon a small outcrop some 30 meters down the cliff. A further fall five times as long awaits him if he slips.

"I thought you were a climber?" she shouts.

Fartlebrow says something very rude, yells that his ankle is twisted, and can't she use her bloody eyes to see that he has no pitons or rope, blast it? His temper appears somewhat frayed. "Bring a rope!"

"I'll get one!" Mischa bellows, and, unnecessarily, "Hang on!"

Fartlebrow has not been taken by a huge vulture, or some other awesomely terrible monster. Mischa's trepidation evaporates, and she turns and begins running back to Station 2152. *She* is going to save Muncey Fartlebrow. She will become famous. Through her efforts, and her efforts alone, her assumption of authority, she will save the day. All the kudos will be hers.

Panting hard, she reaches the TSV, impatiently returns through its double locking doors. She hunts through the storeroom for rope. There is compacted farming machinery and motors, fabricating units, assorted paraphernalia to aid potential pioneers, and, ah! a binding converter.

Feverishly Mischa hauls the spinner out, plugs it into the power supply. Soon she will have a rope. Fartlebrow will soon be rescued, to be returned to his wife. To Kazy Kuddels. To What's-her-name, and the rest of them.

The desired rope coiling out into her hands, Mischa halts her racing mind, to pause. To think. She becomes abstracted, watching the Hiten resilient line feeding out steadily from its slot, until it becomes quite an excessive amount.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Mischa ceases to move in haste. She sends the last samples she has collected back to base, confirm's this planet's desirability.

She then sends an electrifying message: "Muncey Fartlebrow has been found. We are both very much alive, and are both quite well, thank you very much. Mischa Trebbly. Over and out."

With her slicer on short range, Mischa next carefully and irreparably melts out a clutch of crucial circuits into a fused blob, to render Station 2152 inoperative. This she can blame on Fartlebrow for not overhauling the unit as he should have. Tch-tch. Nice. She gives herself a small, happy smile.

No parts to build other TSV's will come through 2152. *They*, back home, *know* which sun this is, of course, and they *will* send another TSV, but *that* will not arrive for a decade or more.

Satisfied with her handiwork, Mischa gives herself a little whistle, *now* drapes the coils of rope over her shoulder, and cheerfully goes to assist the stranded braw laddie. ■

IN TIMES TO COME

● Science fiction has evolved enough that I must expect raised eyebrows when I tell you that our September cover story is called "The Barbarian Princess." However, if I add that the author is Vernor Vinge, you'll probably suspect—correctly—that he has a good deal more up his sleeve than the kind of sword and sorcery you expect to find in pages other than these. If you've read his novel *The Witling*, you may recognize this as something that goes before; if not, don't worry about it. I think you'll enjoy this anyway for its portrayal of an intriguing world, a memorable character, and a delightfully different concept of "science fiction publishing."

The rest of *our* fiction line-up, barring unforeseen last-minute shake-ups, will include another *Uchu-giin* story from Eric Vinicoff, a hard-to-classify but easy-to-enjoy piece by Arthur C. Clarke on "The Steam-Powered Word Processor," and our own Shelley Frier's fiction debut. And the fact article, by James R. Powell and Charles Pellegrino, offers another scientific view of a way science-fictional dreams of starflight may be almost within our reach.

● The difference between a rabbit and a rock is the information content, and the difference between a living and a dead rabbit is in the availability or usability of the information.

Dr. John A. Ball

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the reference library

By Tom Easton

A Door into Ocean, Joan Slonczewski, Arbor House, $17.95, ? pp.
Killashandra, Anne McCaffrey, Ballantine/Del Rey, $16.95, 305 pp.
Cobra Strike, Timothy Zahn, Baen Books, $3.50, 352 pp.
The Widow's Son, Robert Anton Wilson, Bluejay, $9.95, 343 pp.
Starswarm, Brian W. Aldiss, Baen Books, $2.95, 246 pp.
Rogue Bolo, Keith Laumer, Baen Books, $2.95, 256 pp.
The Praesidium of Archive, Jefferson P. Swycaffer, Avon, $2.95, 208 pp.
Emile and the Dutchman, Joel Rosenberg, NAL, $2.95?, 257 pp.
The Planets, Byron Preiss, ed., Bantam, $24.95, 336 pp.
The Lays of Beleriand, by J. R. R. Tolkien, ed. by Christopher Tolkien, Houghton Mifflin, $16.95, 393 pp.

Reviewed by Stanley Schmidt:

Barnaby #1. Wanted: A Fairy Godfather, Crockett Johnson, Ballantine/Del Rey, $2.95, 213 pp.
Barnaby #2. Mr. O'Malley and the Haunted House, Crockett Johnson, Ballantine/Del Rey, $2.95, 218 pp.
Barnaby #3. Jackeen J. O'Malley for Congress, Crockett Johnson, Ballantine/Del Rey, $2.95, 218 pp.

This month, I'm running just a little later than usual. The first reason is that I'm writing this just after Christmas. The second is that two weeks ago I began teaching myself BASIC for the heck of it, and as an exercise I decided to try to write a random "story generator." Here's a sample of the output, very lightly edited:

> Once upon a time, a famous elf tricked a daring job. They then plainly scooped the false job. The secret witch especially fastened a childishly weird plane and merely danced a hand. When a voice nicely sank the ten mountains, he hurried our stupid world. We then merely planned a strange group. The glossy mountain

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

brokenly spoke a sickly tight face and heroically waited a cat. When the cat roundly wiggled the five fights, it returned my short booze. Finally, a right way heard an especially long sword.

I'd hate to have to review it, but you have to admit it's a new kind of "science" fiction! If *you* want to play with it, let me know. If you have a TRS-80 Model 4 or 4P, send me a blank disk and return postage, and I'll make you a copy. If you have some other machine, send me a buck for copying and postage and I'll send you a listing.

The publisher is touting Joan Slonczewski's second novel, **A Door into Ocean,** as "a major work" in "the central tradition of world-building in SF," and it's right. The author has used her expertise as a biologist (at Kenyon College) to create an all-ocean world whose ecology has a marvelous intricacy and verisimilitude, flawed only by a too short and too global response time to the meddlings of exploiters. On Earth, we know, the environment responds within a year to industrial wastes, pesticides, and so on only on a very local scale. To affect our world as a whole takes decades or centuries, even though we count our numbers in the billions. On Slonczewski's world of Shora, the marine ecology is semi-annually renewed by a migration of giant "swallowers" that engulf surplus, immature "raft" plants and occasional mature ones, bearing the homes of the all-female Sharers, a variant humanity that reproduces by parthenogenesis. When the technically sophisticated residents of Valedone, whose moon is Shora, arrive, they find it expedient to try to protect their bases with swallower repellents; the result is ecological stagnation and incipient disaster for the Sharers. Fortunately, the Sharers, though they lack much familiarity with industrial-grade physics and chemistry, are superb bioengineers: they soon devise a bacterium that can degrade the repellents, thus restoring Shora's ecology.

But all this is only a small part of the tale. Slonczewski is far more interested in contrasting the aggressive, stone-oriented, anti-nature, "malefreak"-dominated culture of Valedone with the more peaceful, water-oriented, compassionate culture of Shora, which believes in cooperation with nature. She does *not* believe, with many feminists, that the one kind of culture is inescapably linked to male domination, or the other to female domination, for much of her point is that some males can escape their basic nature, if only they are taught to Share.

Door begins with the arrival on Valedone of a Sharer couple, Merwen the Impatient and Usha the Inconsiderate, come to learn by observation whether the Valedonians are truly human. They learn a great deal, but most important, when they return to Shora they bring with them Spinel, the young and shiftless son of a small-town stonecutter. His adaptation to Shoran ways shows even more of "malefreak" humanity, and eventually Slonczewski even uses him to make a point about the naturalness of stone.

Valedone and Shora are two remnants of a long-gone interstellar civilization whose people, the Primes, destroyed themselves with their technology. At the time of the story, Valedone belongs to a stellar confederation dedicated to preventing similar disaster by destroying whatever worlds do not knuckle under to the rule of what appears to be an immortal cybernetic "Patriarch." The Patriarch's envoy, Malachite, soon arrives at Valedone for his decadic inspection tour and promptly settles a

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

rebellion by blasting a city to dust. He then sets in motion an attempted Valedonian takeover of Shora. After he leaves, the troops settle in, but their shootings, capturings, and torturings make little impression. The Shorans are dedicated nonviolent resisters, intent on Sharing experience and knowledge; the roles of master and servant are alien to them, and they refuse to Share that particular knowledge, except insofar as they must to understand what the Valedonians want. In time, their tactics succeed, for they subvert the aggressiveness of Valedone's soldiers, and they even wear down the invasion's commander, in part because his behavior costs him his love, a woman who grew up among the Shorans, the daughter of the trader who first contacted the Sharers.

The tale is complex, rich, and thoughtful, and many of its characters are unusually well realized. The greatest defect, I feel, is that the passive resistance of the Sharers to the Valedonian invasion goes on much too long. There is a point to Slonczewski's attention to the agony and the frustration, but this section of the book does drag, wearing down the reader much as the Sharers wear down the invasion force. It doesn't help that the Sharer's final victory just seems to happen, without any single great impelling event. The Shorans do not convince their opponents—which might be too much to hope, as Slonczewski indeed seems to say when she refuses to turn her protagonists into missionaries—but exhaust them.

Yet Slonczewski's tale is potent enough, vivid enough, alive enough, to overpower what I call flaws. Don't let me put you off. Buy it. Read it. You *will* enjoy it.

Anne McCaffrey's **Killashandra** is less good partly because we have seen heroine Killashandra Ree before, in *Crystal Singer*, and partly because the author fails to tie up some important loose ends, such as *why* the Optherian government won't let its citizens leave the planet. Yet the book is charmingly romantic, excitingly clandestine, exotically South-Seas tropical, and an overall very good read.

You may recall that Killashandra was once barred from her trained-for career in music because of a burr in her voice. Frustrated beyond bearing, she chucked it all by joining the Heptite Guild on Ballybran, where the crystal singers, qualified by having perfect pitch, mined the crystals that made possible civilization's communications and transport. Unfortunately, crystal singers tended to go weird in body and mind, thanks to a Ballybran symbiotic microorganism, and eventually to lose their capabilities. Fortunately, Killa adapted very well to the symbiote and proved a marvelously competent singer.

As this novel opens, Killa is suffering the agony of too much exposure to Ballyban's crystal. She wants to get off the planet for a vacation. When she finds the rare white crystal, she thinks she can finally do it. When she brings in her find, however, there is an off-planet mission awaiting her: Optheria needs her white crystal, as well as a qualified technician, to rebuild a multi-sensory organ built around the crystal's features. The old one, the biggest and most powerful on Optheria, was destroyed by a treacherous organist, though it killed him.

There is more to the mission: Optheria was founded with the noble aim of building a colony that did not intrude on the local environment. It is an "all-natural" world, and a lovely one that attracts tourists in droves during the summer season. But the natives never,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

but never, leave. Supposedly, Optheria is so delightful no one wants to. On the other hand, the interstellar government knows that no place can possibly be so delightful that it suits everyone, and there have been a few complaints. Killa should go to Optheria to repair the organ, but she should also go as an undercover agent, trying to learn whether the Optherian government really does deny its people freedom of choice. If it does, the authorities will step in to rectify matters.

Reluctantly, Killa accepts her dual mission, unaware that before she has a chance to do more than look at the damaged organ, she will be kidnapped and dumped on a deserted island. If only she had known—fortunately, she didn't, and the kidnapping leads directly into a passionate love affair with another frustrated musician, a hunk and a leader of the underground. She soon learns the heinous uses to which the Optherian Elders put their crystal organs, and she does her best to stymie all.

The contrasts between the cultures of Ballybran, Optheria's mainland, and Optheria's islands help McCaffrey develop her discussion of liberty quite effectively. Ballybran is a "company town," with its citizens enslaved by their debt to the company store and by their symbiotes. The mainland is a repressive, paternalistic oligarchy, with its citizens enslaved by the will of others. The islands are a *South Pacific* utopia, but even they hold slavery, this time to the elements. McCaffrey seems to be saying that Ballybran has most in common with the islands, for it is much the same whether one works to weather hurricanes or to buy food from the company store; either way, one is ruled by the needs of survival rather than by the whims of tyrants.

I'm tempted to try to draw a parallel between the worlds of McCaffrey's writing and that of her residence (Ireland). Might we call the Optherian mainland England? The islands Ireland? Ballybran the United States (where writers are taxed)? But I dasn't. Why, I might get the IRA on my neck!

In his Cobra novels, Timothy Zahn has dealt with the problem of cybernetically enhanced warriors who, superlatively successful in war, must cope with the transition to civilian life. Their implanted armor, nanocomputers, and weaponry cannot be removed, and they are feared by other civilians. Fortunately, in an interstellar civilization there are always frontiers, and the Cobras can go to new worlds where their skills and equipment aid survival and where they can work to shape a culture in which they can fit. In **Cobra Strike,** Jonny Moreau is aging, his body painfully rejecting his implants. But he has sons, one—like Jonny's distant brother—a political leader, another, like Jonny himself, intent on Cobrahood. And here comes the alien Troft, the old enemy, with an offer the Cobra society cannot refuse. The Troft have found a planet inhabited by a species that seems likely to become a serious hazard to the Troft and other starfarers if it ever develops star travel. They also know of five vacant worlds ripe for human settlement. If the Cobras will undertake to neutralize the alien threat, the Troft will give them the coordinates for new *lebensraum*.

The issue before the Cobras is: Will they, having given up war, turn mercenaries? They need the new worlds, for one of their own has turned uninhabitable (*à là* Harrison's Deathworld). The decision is no decision: They will visit Qasama to appraise the alien threat for themselves.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Not surprisingly, the threat turns out to be real indeed. The Qasamans are humans, the descendants of a lost colony ship, whose culture has taken a weird turn. They are quintessentially paranoid, and they each carry a hawk-like bird, a mojo, on their shoulder. The mojos prevent interpersonal violence, serving as superlative bodyguards, while the humans guarantee the mojos' reproduction.

Cobra Strike's point is the maturation of Jonny's son Justin, the new Cobra, the coming of a new generation to handle the parent's problems in a new way. But there is plenty there for readers who want only flash and adventure. The exploration of the Qasaman problem is guaranteed to keep the vicarious adrenaline flowing, and the solution turns out to be a nifty bit of ecological engineering, very much in the *Analog* tradition. George R. R. Martin and Haviland Tuf should enjoy it.

In May 1985, I reviewed Robert Anton Wilson's *The Earth Will Shake*, Volume I in the *Historical Illuminatus Chronicles*. It introduced Sigismundo Celine, a young man destined to shake the world but embroiled in the coils of the worldwide Illuminatus/ Freemasonry/etc. conspiracy. It was a good book, a bizarre and witty game played with history, political science, and the reader's head, and I recommended it.

Now we have Volume II, **The Widow's Son.** Wilson is still playing the same games, but here he is much less entertaining. A student in France just before the people unleash the guillotine, Sigismundo now seems the victim of the Freemasons, for by their machinations he winds up in the Bastille, and then in some strange place where his sense of time and truth is variously deranged. His torturers seem intent on "illuminating" him—driving his mind into some new state where he can perceive directly the truth of history. We have Siggy's capture, his heroic escape, his incarceration, his escape from the inescapable Bastille, his hallucinations, and finally his rescue and departure for the American colonies on the eve of their revolution. Along the way, we meet a stonecutter whose remarkable and anachronistic economic insights Wilson uses to convey his commentary on events. There is also the Irishman, Seamus Muadhen, victim of the English tyrants, who winds up in the service of Sir John Babcock, the guilt-ridden boy-lover who married Maria, Siggy's old flame. He too heads for America.

I get the feeling that Volume III, *Nature and Nature's God*, will be a much more exciting book. Sigismundo is bound for Indian territory, and there are intimations that he will in due time accept the fate the stars have laid out for him. *The Widow's Son* is awkwardly in the middle of great events, serving little purpose except to mark the place. It helps to clarify Wilson's philosophy, yes, but its best feature is its footnotes, most of which debate the truth and meaning of the life and work of the mad De Selby, who wrote books before he was born.

Last month I agreed with a reader who wanted to kvetch about how publishers neglect to reveal a book's past history. Let me echo that agreement this month, on the occasion of Brian Aldiss' **Starswarm.** It is a collection of short stories linked by a frame that says, "Here we are in the year 100,000,200 A.D., spread all across the galaxy. Let's see what is going on in Sector Vermilion, Sector Grey, and Sectors Violet, Diamond, Green, etc." And then the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

nine stories, ranging from the Vancian "Legends of Smith's Burst" to the more conventionally Aldissian "The Game of God" and "Intangibles, Inc." Many are bleak. All are incisive, witty, and well worth reading.

But—though Baen blazons the book "FIRST COMPLETE U.S. EDITION!" there is no clue as to when and from whom any partial U.S. edition or complete British edition appeared. Nor is there any clue as to which magazines might have been honored by the stories' original publication. And all I can tell you is that H.W. Hall's *Book Review Index, 1974-1979* (Gale, 1981) lists a 1964 *Starswarm* by Aldiss from Signet; since it was only 159 pages long, there are presumably major differences.

Baen Books also offers us Keith Laumer's **Rogue Bolo,** saying it "contains the first new Bolo story in years." The trouble is that the book contains two stories, both titled "Rogue Bolo" in the proofs I saw, and with no indication of which one is the new one. I *think* it's the second one, in which a smart-ass kid awakens a museum-piece Bolo just in time to save his world from a new invasion by the aliens last seen two centuries before. But there's no clue as to where the first was published, though internal clues—contradictions of the history of Bolos as developed later and summarized in a brief essay at the end of the book (not to mention internal inconsistencies)—suggest it is a very early tale, updated very slightly to make it "relevant." I found neither worth the price of the book.

Avon may be little more help. It bills Jefferson P. Swycaffer's **The Praesidium of Archive** as a novel. But this book too is a collection of short stories, framed by the transcript of a meeting of the title body, which oversees a vast interstellar empire, doing its best to guarantee the empire's citizens security and freedom, but not, in an odd apposition, liberty. They plan the complex economy, defend against attackers and rebels, and deal with death when it comes, as it must, too near. The stories serve to illustrate the rivalries and biases of the Praesidium's members, interrupting the transcript as if told by the members around which they center. The problem with this device is that it makes the efficient, elite Praesidium sound like a gaggle of quarreling schoolboys. It may be Swycaffer's point that governing bodies generally do behave in such ways, but he is not very convincing, especially considering that the transcript's time ticks give three pages of Praesidial byplay a full five minutes and a 40-page digression 30 seconds.

Have the stories been published before? Who can say? The book doesn't tell, though there is a note to the effect that Swycaffer has borrowed with thanks "concepts and nomenclatures . . . from the games Imperium™ and Traveller™."

Is NAL a little better? At least, it tells us that two of the stories in Joel Rosenberg's latest novel, **Emile and the Dutchman,** appeared in shorter, different form, in *Asimov's*. The rest of the stories presumably here see print for the first time. All deal with the experiences of Emile von du Mark, scion of a wealthy family drawn into the Contact Service, whose mission it is to leap through new Gates to appraise new worlds and, if their sapient residents are dangerous to humanity, to destroy the Gates or the sapients, as appropriate. CS agents are expendable, is the premise of their Service; humanity is not.

Rosenberg's basic idea is nifty enough, in the fine old tradition of SF. So are

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the stories, in which Emile must cope with the Dutchman, a crusty slob of a commanding officer who owes more than a little to Anderson's Nicholas Van Rijn, and in the process survive the Service, a world of berserk bats, telepaths who insist on giving you what you want most, amphibians with 23 words for treachery, and more. There's an appealing combination of pragmatism and idealism but, like so much of SF, the stories focus far more on the perils of the universe the author can imagine. Rosenberg has done better with his real novels, such as *Ties of Blood and Silver*.

Byron Preiss' **The Planets** is an SF anthology, but only of sorts. Constructed for the coffee table as much as for reading, it is a series of alternating essays and "speculations," or short stories, all relating to the planets of our Solar System and all evocatively illustrated by a variety of artists. Andrew Fraknoi, executive officer of the Astronomical Society of the Pacific and part-time professor of astronomy and physics at San Francisco University, served as the scientific consultant for the book and wrote the essay on the Solar System as a whole. The other essayists include a number of working scientists and writers—Asimov, Clarke, Ursula B. Marvin, G. Jeffrey Taylor, Michael H. Carr, Joseph Veverka, David Morrison, Dale P. Cruikshank, Robert Silverberg, Clark R. Chapman, Lawrence Colin, and William K. Hartmann.

The essays are brief surveys of what we now know about the planets. They contain little to astonish anyone familiar with the results of the last twenty years of space exploration from, say, *Scientific American*, but they will serve as an admirable introduction to planetary astronomy for a teenager. The only problem is that they show a certain lack of attention to the editing. On page 167, for instance, one astronomical unit is said to be a mere 150 kilometers. Perhaps worse, because less obvious unless you take a moment to look up the source of Uranus's name in the *American Heritage* dictionary, on the same page Cruikshank says the planet was named after Urania (from the Greek *Ourania*, heavenly one), the muse of astronomy. The *Heritage*, on the other hand, says Uranus's namesake was the earliest supreme god of the Greeks, Uranus, son and consort of Gaea and father to the Cyclopes and the Titans; he was a personification of the sky.

Most of the stories should appeal to any fan. Bradbury's offering, "The Love Affair," is a new Martian chronicle, and it is almost as charming as I remember the earlier chronicles. Hartmann's "Handprints on the Moon," though excessively sentimental, does express the dream of cooperation in space well. Harrison's "After the Storm" tells us of the crashing disappointment that awaits the first human to reach the moon in the next cycle of civilization. Zelazny's, Sheffield's, and Silverberg's treatments of life on Saturn, Uranus, and Pluto are all disappointing; perhaps the theme has been worn out for the time being. Farmer's "Uranus or UFO versus IRS," is cockeyed but slight. Benford and Williamson flesh out their respective visions of life in the outer system. Marta Randall, in "Big Dome," gives us an alternative view of the terraforming of Venus. Preuss' "Small Bodies" tells us of a hydrocarbon strike on an asteroid, and of the fundamentalist preacher who begins to rethink his position. The best of them all is probably Frank Herbert's "Transcript: Mercury Program," which gives us a ringside seat at the system's greatest spectacle,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the "feeding" of Sol with industrial wastes to elicit pyrotechnic displays.

Finally, here's one for the scholars: Tolkien's **The Lays of Beleriand.** Tolkien's son Christopher, who seems to have made a career out of excavating his dad's old files, here presents early versions of the tales of Turin and of Beren and Luthien Tinuviel. These long poems are ancestral to the prose versions we saw in *The Silmarillion* and to the fragments in the trilogy, and Christopher's aim is to display the evolution of the "history" of Middle Earth in his father's mind. He succeeds very nicely, but he displays something else as well, and something of perhaps more interest to other writers and to readers interested in how writers write. This is the process of creativity, the endless renaming of characters, the adding and subtracting of plot elements, and the ramification of symbols. I can see the book playing an important role in high school and college lit classes for precisely this reason.

Tolkien's epic poems here display a very strong Norse or Celtic feel, but that is not about to put off any Tolkien fan. They are marvelous as poems and as stories, and they warrant reading by any fan of the man who almost single-handedly made modern fantasy what it is. They are in fact so effective that one can easily wonder why epic poets are held in such low esteem by today's readers and publishers. It may have something to do with the antiquity of the mode.

Despite my praise, the casual reader deserves a word of warning: The book is very nicely produced, and the Tolkien name is prominent on the jacket, but the poems are only part of the book. They are embedded in a framework of scholarly and biographical apparatus that makes the whole of most interest to dedicated scholars of the Tolkien opus. It would probably pay Houghton Mifflin to do the major epic, "The Lay of Leithian," as a much smaller book. The earlier version, with fragments, notes on unwritten portions, and the later partial version, and with a dozen suitable illustrations, but without all the analysis, would make an enchanting trade paperback. Given more artwork, I can even see it becoming a lovely coffee-table book.

Cushlamochree! Nobody ever said Crockett Johnson's comic strip *Barnaby*, which ran from 1942 to 1952, was science fiction—but it will appeal to many *Analog* readers anyway. Those of you who are old enough will remember its unique blend of whimsical fantasy and gentle satire, with characters like five-year-old Barnaby who wishes for a fairy godmother and instead gets Mr. O'Malley, a bombastic and bumbling fairy godfather who smokes Havana cigars and occasionally runs for Congress (and wins). For those too young to remember, I don't have room to tell you much about such other characters as Launcelot McSnoyd, the snide (and invisible) leprechaun with a Brooklyn accent; Atlas the Mental Giant; Gorgon the talking dog (and incorrigible punster); and Gus, the erudite but decidedly unprepossessing ghost. But I do have room to recommend strongly that you acquaint yourself with them forthwith, now that you have the opportunity for the first time in over thirty years.

I have, I must confess, ulterior motives. You see, I'm not *really* old enough to remember Barnaby from his first incarnation. Until now, I knew him and his friends only from a single paperback volume which my parents owned (and I wore out) when I was growing

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

up. Now the Del Reys have started reissuing the entire run of the strip in a new series of paperback books. They have enough material for twelve, I'm told. So far they have issued three: **Wanted: A Fairy Godmother, Mr. O'Malley and the Haunted House,** and **Jackeen J. O'Malley for Congress.** Whether the series is completed will depend on how well the first three sell.

So please buy them. I want the other nine.

You'll enjoy them, too.

Stanley Schmidt ■

ON GAMING

(continued from page 81)

map. There are towns scattered about where you can purchase armor, weapons, and, if you're lucky, torches and magic gems. Pubs often harbor talkative bartenders who will, for the right price, offer some intriguing rumors. As you move around, the party consumes its rations and it's important to keep an eye on the food supply.

In the wilds of Sosaria the party can be attacked by orcs, goblins, and worse. The screen displays the formation of the enemy and each of your four party members can move and attack independently. Quick thinking is crucial here since the baddies move right in and hack away at your character's hit points. Each fight is to the finish. Defeat the enemy, and a chest containing gold, armor, or a booby trap awaits.

Scattered through the wilderness are some nifty dungeons. The graphics here are quite entertaining, as you see the hallways, corners and doors as you move through the dungeon. See, that is, if you have a torch. I entered my first dungeon without that useful item. Fortunately, my wizard cast a spell for a temporary light and my stalwart gorup had a moment to hustle out.

Ultima III is filled with nice touches. All the possible commands are on a single reference card. This is no "guess the word" game. You know exactly how to talk to the computer. A nicely done "Book of Runes" describes, in flowery language, the possible effects of spells. Characters can talk to other characters, hand stuff to each other, move in a variety of directions, and switch weapons in battle.

The screen displays the party's current position or, in case of a battle or a dungeon, what the characters see. Important information, such as each character's hit points and food status, are constantly displayed. An atmospheric cloth map (suitable for framing) is also included.

Challenging, fun, and filled with clever touches, *Ultima III* is everything a computer game should be. ■

(*Ultima III* was reviewed on an IBM-PC.)

● What would I do if I learned from my doctor that I had only six months left to live? I'd ask for a second opinion.

Kelvin Throop III

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

brass tacks

Dear Mr. Schmidt:

I want to heap some praise on S.C. Sykes's "Rockabye Baby," in your Mid-December issue. He obviously has been to the world of people with severe disabilities, either as a quad himself or as a personal care attendant. I cannot vouch for the accuracy of all his detail concerning the daily life of people who use wheelchairs, but I know his exploration of attitudes is on the mark.

I know this because I'm one of your blind readers, receiving my *Analog* on records from the Library of Congress. I've felt the rejection and misunderstanding on the part of able-bodied society he speaks of so eloquently. I've shared the great sense of accomplishment that comes of being able, once more, to do something on your own, no matter how small.

I don't know if the author meant to make a polemical statement, but his messages, I hope, will have come through to the able-bodied majority of your readers. Even the most severely handicapped among us still can have a life of dignity, still can be happy. A whole, perfect body is not the answer to every need. Even though the protagonist decides in the end to undertake the risky experiment that will transform him, he still wants around him the memories of his past life.

Sykes has written one of the finest stories to appear in *Analog* for years.

ALAN CLIVE

Silver Spring, MD

Dear Dr. Schmidt,

You do not seem to be receiving much sympathy for your ideas about investigating the paranormal. Ben Bova gently chides, "How many failures . . . before we conclude that the subject matter . . . does not exist?" A better question would be: Should a scientist

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

conclude that a thing does not exist? Natural Philosophers long searched for a way to transmute "base" elements into gold. Not until after it was thought impossible did Rutherford, in Montreal, discover the transmutation of elements. Many isotopes, including gold, are now routinely produced in particle accelerators and nuclear reactors.

I have no personal interest in the paranormal, but I find it admirable that you have taken the risk in making your stand. My opinion is that too many scientists make authoritative statements they cannot really support. They are like the church, which they once feared: powerful and dogmatic. In *Nature*, one reads too many angry missives condemning creationism. "Evolution has been proved," they howl with the fervor of churchmen who once proclaimed the heresy of believing other than Ptolemaic cosmology.

I certainly have nothing against the theory of evolution. It is a great working theory. As a person who has done graduate work in biochemistry, I am fascinated by the debate over the synthetic theory vs. molecular determinism vs. neutral theory vs. punctuated equilibrium (competing versions of biological evolutionary theory). Fascinating too is the theory of Cairns-Smith *et al* that life evolved from crystals of clay (an alternative to the primordial soup of J.B.S. Haldane and Oparin). These theories all do a (more or less) reasonable job of explaining the relationships among things as they are observed today. Creationism is not a good working theory for science, but that does not mean that it is not true (or that it is true).

When we go to a skillfully produced movie, we can get caught up in its world, forgetting reality. Yet the whole thing is an illusion created by the director. Suppose (for the sake of argument) that 6000 years ago, God said, "Let the universe be created and appear to have evolved from a BIG BANG fifteen billion years ago, so that I be not obvious." What I would like to ask is: How do these passionate writers of letters to *Nature* know that it did *not* happen that way? How do they know that when we look into the past we are not watching a painted backdrop in God's BIG PICTURE (as Peter O'Toole calls it in his role in *The Creator*)? Occam's razor cannot be used here because such a theory would not be a scientific theory but a supra-scientific theory.

It seems to me that science and religion do not impinge on each other at all. Science cannot say anything about the past. It can only say how the past appears. Scientific theories about the past are important, but not because they help us understand the past. They are important because they help us organize our understanding of the present. Our speculations about the past are all based on circumstantial evidence—it is the present, after all, that we observe, not the past. Anyone who has a passion for the truth would have to admit that. Yet many scientists seem determined to wipe out every vestige of spiritualism extant. Why?

TOM COHOE

Winnepeg, Manitoba
Canada

Dear Dr. Schmidt:

I enjoyed reading Dr. Cramer's article, "The Pump of Evolution" in The Alternate View column of the January 1986 *Analog*, even if he's a physicist and not an evolutionary biologist. However, I must make several small corrections in his article. First, Drs. Stephen Jay Gould and Niles Eldredge, who originated the idea of punctuated equilibrium, are not archaeologists, but in-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

stead are paleontologists and evolutionary biologists. Archaeology refers to the study of the culture and life of ancient peoples through excavation of their cities and study of their relics and artifacts. It is usually regarded as a branch of the social sciences, not of the natural sciences, i.e. life and earth sciences.

My second correction to Dr. Cramer's article has to do with his aside about the Alvarez meteor strike hypothesis. He stated that "There is even speculation that Iceland, which developed from subocean volcanic activity starting about 65 million years ago, may have risen from the hole punched in the Earth's crust by the Cretaceous meteor." (p.125) This is an error; Iceland does not appear to be the result of a meteor strike at the Cretaceous/Tertiary boundary (Redfern 1983). For one thing, there have been no tektites (glass fragments due to meteor strikes) of an appropriate age found in Greenland, Ireland, Scotland, or Scandinavia, all of which were located close enough to the site of Iceland during the Mesozoic and Tertiary to have had significant amounts of textites deposited, if any were formed. Traces of volcanism, centering Iceland, do occur elsewhere; one example is the columnar basalts in the north of Ireland known as The Giant's Causeway from 60 million years ago. Second, the earliest basalts found in Iceland are earlier than the cretaceous/ Tertiary boundary (up to 75 million years ago, Scrutton 1973), i.e. Iceland was already volcanically active before the Cretaceous meteor strike. Finally, French (1984) proposes a continental, possibly even North American, impact site for the Alvarez meteor on the basis of Bohor, et al.'s (1984) discovery in Montana of shock-metamorphosed quartz grains in the Cretaceous/Tertiary boundary clay.

I must also throw cold water on Dr. Cramer's general hypothesis as Raup and Sepkoski's 26 million year extinction periodity hypothesis is apparently not statistically robust enough to be valid (Hoffman 1985; Kitchell and Pena 1984). While Playford, et al. (1984) have found anomalously high iridium concentration associated with a mass extinction in the Upper Devonian, most evolutionary biologists and paleontologists are fairly certain that other mass extinctions were caused by gradual events (e.g. Corliss, et al. 1984), rather than by meteorites as Raup and Sepkoski's hypothesis requires. I'm sorry to be a killjoy; the simplicity of the periodic bolide causing all known mass extinctions is an elegant hypothesis, but life (and the natural sciences) have never been either simple or particularly tidy. Life's like that, you know.

ALLAN H. VOGEL
Portland State University

References

Bohor, B.F., E.E. Foord, P.J. Modreski, and D.M. Triplehorn. 1984. "Mineralogic Evidence for an Impact Event at the Cretaceous-Tertiary Boundary." *Science 224:* 867–869.

Corliss, B.H., et al. 1984. "The Eocene/Oligocene Boundary Event in the Deep Sea. *Science 226:* 806–10.

French, B.M. 1984. "Impact Event at the Cretaceous-Tertiary Boundary: a Possible Site. *Science 226:* 353.

Hoffman, A. 1985. Patterns of Family Extinction Depend Upon Definition and Geological Time Scale. *Nature 315:* 659–662.

Kitchell, J.A. and D. Pena. 1984. "Periodicity of Extinctions in the Geologic Past: Deterministic Versus Stochastic Explanations." *Science 226:* 689–691.

Playford, P.E., et al. 1984. "Iridium Anomaly in the Upper Devonian of the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Canning Basin, Western Australia." *Science 226:* 437–439.

Redfern, R. 1983. *The Making of a Continent.*

Scrutton, R.A. 1973. The Age Relationship of Igneous Activity and Continental Breakup. *Geological Magazine 110:* 227–234.

Dear Dr. Schmidt:

Although I've been tempted many times to write to you over the past years, until now there has never been sufficient motivation. Most often, the magazine is just what I want: a lively and exciting forum for ideas and opinions, but I've been content to be only a recipient rather than an active participant.

The story that got me off my duff is Tom Ligon's "The Devil and the Deep Black Void" (January, 1986). As a Baha'i myself, I've often indulged in speculation about what society will look like in the future when the Baha'i Faith is more influential. So I was delighted to read Mr. Ligon's story.

There were two items which might have been woven into the story which would, I think, have made it both more interesting and more consistent with Baha'i teachings.

First, the author has the Baha'i colony planet being governed by "Vazirs," or elders. Although this fact did not assume an overwhelming significance in the story, it missed an important teaching. Baha'i law establishes Houses of Justice as the governing body for Baha'i communities. This is a body of nine or more members which is elected by secret ballot without any electioneering or campaigning; a Baha'i election consists of Baha'is gathering together, praying, then casting their ballots. The results of such elections are often extraordinary, with people elected who would never have sought such a position.

More important, however, is the fact that the Baha'i teachings do not include pacifism. The cruelty of the rulers in Iran, the birthplace of the Baha'i Faith, toward the Baha'is in the last few years has shown the steadfastness and love for the Baha'i Faith of many men and women who have been willing to suffer horrible tortures and deaths rather than recant their religious convictions. The reasons for this are the Baha'i teachings that we should obey the laws of the governments of the countries in which we live (which is why the administration of the Baha'is of Iran was dismantled voluntarily at the demand of the Iranian government), and that we are not allowed to recant to avoid persecution, as is the case in certain situations with some Moslems.

Coupled with the peace-loving values common to all Baha'is, it is easy to see why a person might get the impression that we are pacifists. We believe in the absolute necessity for world peace, and we believe that it will come about through a twofold process of political necessity at first and by a spiritual awakening over a longer period. Our teachings affirm that communities have the duty to maintain order to provide a healthy environment for the individual to progress. In fact, the maintenance of social order by a just government is seen as one of the ways that peace can be established. Thus, while it is true (as I'm sure it is for most people) that the need for the use of force by police and other law enforcement officials is not glorified, we recognize the legitimate need for it on occasion. One of the earliest Baha'is, the son of the founder of our religion, was said to have "walked the spiritual path with practical feet." Baha'is are idealistic and hopeful, but we are not naive.

It seems likely to me that a newly

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

established farming colony would be short on the weapons and ammunition (as well as the know-how) necessary to deal with the kind of threat that Tom Ligon creates in this story. This would be particularly true of a farming community composed of the kind of idealists who might be attracted to colonizing a planet by religious minorities. This to me would have been more plausible as a reason for the poor ability of the colonists to defend themselves, rather than a pacifistic set of beliefs.

I liked the touch that had Hab reflecting on the willingness of the Baha'is (as well as the Moslems) to believe in a miracle when he had used "scientific" means to assassinate the Mihdi. In one of his novels, John Brunner once said that Coincidence means that you weren't paying attention to the other half of what was going on. It is often tempting to suppose that a miracle has occurred when in fact nothing of the sort has happened. This temptation is particularly strong for those of us who believe in a caring, merciful God. On the other hand, the miracle in this story could be seen as Hab's inspiration to deal with the situation as he did.

These things aside, the story was a thought-provoking and interesting one. I liked the characters, and the use of Persian and Baha'i nomenclature was well done. Thank you for publishing it!

BOB PETRULIS

Seattle, WA

Dear Sir:

I have greatly enjoyed *Analog* with you at the helm. I feel that you embody the speculative spirit required of an *Analog* editor. I immediately detected the shift between Ben Bova's leadership and yours in both the editorial and the story content. The latter shift cannot be directly attributable to a change in regimes, because the stories you oversaw at first had to have been in the pipeline before you became editor, but there was much less "gloom and doom" (post-holocaust, drowning in our own feces, world hunger, etc.) in "your" stories than in "his." Since I was reading science fiction from many sources other than *Analog*, I know that the zeitgeist of the Bova era was one of helpless rage against the primal forces driving us toward our doom. Certainly your arrival as editor did not change things, but the coincidence is so strong that I tend to attribute the resurgence in multi-optioned optimism in your magazines to you. There have been negative scenarios in your magazine since you have been editor, but they have had a humor and optimism that was missing in the '70s. I don't mind being warned of impending disaster; that's what science fiction is about. But, coupled with the warning, I should read of possible solutions—that's what science fiction is *more* about. Most significantly, science fiction should allow me to escape. If I want to know that there is no avenue of exit from my certain doom, I need only to subscribe to the daily newspapers. What I need is what the science fiction of the late '60s and most of the '70s failed to give me. Escapism. Thank you for returning it to me.

Now for the reason I wrote: I am petitioning for membership to the *Analog* Homonym Club, or whatever you call it. You have been tantalizing me for over a year with a game as absorbing as spotting Alfred Hitchcock in one of his movies. For a while, early in your editing, the proofreading was abysmal, but the stories were so good it didn't matter. Now you have only the occasional apostrophe or letter mixup or line mixup; nothing serious. But you have one proofing error which is so predict-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

able that I am now convinced I have uncovered a Secret Message (or, possibly, a Conspiracy). Once AND ONLY ONCE per issue you misuse a homonym. At first I speculated that you were attempting to establish a new, phonetic English Language, but then I would expect the frequency of "accidents" to increase beyond the "noise level." You have, however, deliberately held the number of "mistakes" to one, just enough to irritate but not enough to stir to action (like finding a penny on the sidewalk). I give up. I can't figure out the pattern, but I want A Piece Of The Action. I decided that 1986 will not go by until I get to the bottom of this. To prove that I've got the goods, I will reveal your January and February homonyms:

1/86) Page 62, second column, line 6: "the principle reasons"

2/86) Page 79, first column, line 10: "of harsh plains and angles."

I expect my Decoder Ring (or whatever your cabal uses) by return mail.

MARTIN RYMES
2138 Lowell Blvd
Denver, CO 80211

The Commissar of Proofreading replies. . . .

Deer Missed-Her Rhymes,

Eye no watt ewe our teling mi, sew ouch rye two dew bettor, oak hay?

Dear Mr. Schmidt:

I have enjoyed subscribing to *Analog* for some time now, and never thought I would write a letter of complaint. The two short stories in the last two issues by Harry Turtledove, "And So to Bed," (Jan. '86) and "Around the Salt Lick" (Feb. '86) have compelled me to do precisely that.

By chance, I read the two out of sequence. Being a teacher of American history and a lifelong SF fan I presumed

A badge used to be your reward for achievement in Scouting. Now, satisfaction is knowing you're helping Scouting shape young lives.

The Boy Scouts Alumni family is helping to secure America's future.

Enroll Today . . . Now that's a Good Turn.

Please fill out this form and return it with your membership fee.

To: National Boy Scout Alumni Family

I'm glad to be back in Scouting! Please enroll me as a National Boy Scout Alumnus. I understand membership entitles me to the *Alumni Bulletin,* The Annual Alumni Report, a membership card, and a wall certificate. I'm enclosing my check for:

☐ 1-year membership $10

☐ 3-year membership $30 and you receive a FREE Norman Rockwell print.

Please make checks payable to Boy Scouts of America. Your membership fee is tax-deductible.

Name _____

Address _____

City _____

State _____

Zip _____

Write To:
National Boy Scout Alumni
1325 Walnut Hill Lane
Irving, Texas
75062-1296

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the "Virginia," "America," and etc. were places on some far distant planet in the future that had been named in honor of a previous age of expansion and settlement. That has been standard usage in the genre for decades. I also noted, with some disappointment, a return to another theme that used to misinform science fiction, i.e., that the only intelligent beings in the universe were humans. Worse still, they were clearly *white* humans. Not terribly original nor interesting, I thought, but no matter.

It was only when I read the *first* story in the series that I discovered how genuinely offensive Turtledove's undertaking was. He is talking about a *real* world—ours, and in *real* time—the troubled age of exploration and the slave trade. But Turtledove has re-cast that world in a fashion that is—if not racist, certainly panders to racist thinking. And, no doubt, the author meant further to inspire my ire by recasting his *nom de plume* as Harry Turtledove. One point for the opposition; he certainly got my attention. But if that was his intent, I suspect he has only succeeded in annoying me and that his purpose will be missed by many.

Remember, the most troubled aspect of the age of exploration, and one of the most divisive problems passed on to us from it, is European treatment of non-European peoples. Africans, American Indians, and others were deemed inferior, subhuman, and, therefore, legitimate subjects for enslavement. The fact that these people were *indeed* human caused no end of conflict within white societies—not least of which was the American Civil War. And those conflicts continue into our own time.

Turtledove neatly solves this dilemma by replacing Africans and Indians with genuine sub-humans, the "sims." Here we have a racist's most treasured fantasy world. A world in which it was perfectly fine to do what was done—in the real world—to other human beings.

Much that actually happened to slaves occurs to the sims, but it is okay because these beings are not human. They cannot, for example, be taught to read or write. That the slaves could do both and often tried caused no end of problems and frustrations for masters who insisted they were like sims—subhuman.

The sims seem to be more libidinous than humans (just as black slaves were impugned to be), but they are, after all, only animals. Here, Turtledove intensifies the parallelism with past reality by implying the possibility of sexual liasons between humans and sims, and by noting envy for the sim's "member" on the part of the diarist.

The sims in "And So to Bed" are uprooted from their original environment and shipped across oceans to do hard, unpaid labor for white owners. That, too, was legitimate because the sims were subhuman and, if well-treated, were improved by the experience. In short, what actually happened to the African slave happens in these stories, though the European is portrayed as less brutal, and the sim, a subhuman, profits from the experience.

The problem with the actual past, Turtledove implies, is not the European's compulsion to dominate and exploit. Rather it is that the actual slaves —the Africans and Indians—didn't work out. So Turtledove creates a species that does! The peversity in all this is capsulized in the final scene of "And So to Bed." Here, Wilberforce, the great hero of the British Anti-Slave Trade Movement, is transformed into a petty, carping critic speaking irrelevancies and is easily bested by our diarist. Wilberforce might have asked about the con-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ditions under which sims were brought to England. He would not have lowered himself to the silly exchange our diarist describes. For shame, Turtledove!

In light of this first story, the insidiousness of the second, "Salt Lick," became more apparent. In fact, Turtledove has borrowed wholesale from a tradition in American colonial folklore about the "loyal retainer." The sim, "Charles," is still subhuman, but he is taking on more and more characteristics that make it difficult to distinguish him from the Colonial Virginian's stereotype of the African slave. And in the end, "Charles" proves more loyal to his master than to his own species because he prefers his master's company. This is precisely the most treasured fantasy of the historically real Virginia slave master!

The whole thrust of these stories is that whites erred only in not finding the right species suitable for perpetual subordination. In the process, it is necessary to commit a kind of literary genocide —neither the African nor the American Indian can be permitted in Turtledove's world. This despite the indisputable centrality of both races in the survival of Europeans in the New World.

I *hope* Turtledove wanted to suggest that Englishmen's foibles would have been similar no matter what he encountered in the Age of Exploration. If so, he fails to carry off his design. Perhaps Turtledove thought his stories would be amusing, clever, and full of irony. Instead, they are derivative; they are offensive and painful to nonwhite peoples; and they are reinforcing of the destructive racial chauvinism that already plagues our society. Surely a magazine with the quality and tradition of *Analog* can find better material. At the very least, the editors should publicly disassociate themselves from the implicit and (hopefully) accidental racism that permeates these stories.

ROBERT F. ENGS

Philadelphia, PA

I'm sorry you didn't like those stories, but you assume far too much. In general, in reading fiction, you'd be better off just to look at what the story says *rather than trying to guess all the author's deep, dark, hidden motivations —most of which usually turn out to exist only in the mind of the person making the guesses. In this case, Mr. Turtledove (which is* not *a* nom de plume, *by the way) is a historian; the genesis of the sim stories was simply the realization that if European settlers in America had found true subhumans instead of Amerindians, a lot of subsequent events would have been different. The stories are nothing more or less than an attempt to work out and portray* how *they would have been different—not according to what Mr. Turtledove thought* should *happen, but rather what he thought* would *happen, on the basis of his knowledge of history as it happened on our otherwise similar time-line. Ironically, in view of your rather far-fetched accusation of "racism" one of those consequences would be a significantly improved status for blacks when they do reach America. Stay tuned. . . .* ■

● A man's mouth is not a sack you can draw shut by pulling a string.

Yashar Kemal, *Anatolian Tales*

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

a calendar of analog upcoming events

18-20 July
OKON '86 (Oklahoma SF conference) Info: Okon '86, Box 4229, Tulsa OK 74159.

25-27 July
RIVERCON 11 (Louisville area SF conference) at the Galt House, Louisville, Ky. Guest of Honor—C.J. Cherryh, Fan Guests of Honor—Dick and Nicki Lynch, TM—Sharon Webb. Registration—$15 until 15 July, $20 thereafter (children $10 until 15 July, $15 thereafter). Saturday night buffet—$18. Info: RiverCon, Box 58009, Louisville KY 40258.

25-27 July
ATLANTA FANTASY FAIR (Multi-media conference) at Omni International Hotel and Georgia World Congress Center, Altanta, Ga. Registration—$29 at the door. Info: Atlanta Fantasy Fair, Box 566, Marietta GA 30061. (404) 425-8095.

25-27 July
CON-VERSION III (Alberta SF conference) at Carriage House Inn, Calgary, Alta. Guest of Honour—Jack L. Chalker, TM—Phyllis Gotlieb. Registration—C$15 until 12 July 1986, C$20 at the door. Info: Con-version III, Box 1088, Station M, Calgary AB CANADA T2P 2K9.

25-27 July
TIMECON '86 (SF/media conference) at Red Lion Inn, San Jose, Calif. SF/media Guests—George Takei, Walter Koenig, James Doohan, Peter Davidson. Registration—$25. Info: Timecon '86, 124 Blossom Hill Road, San Jose CA 95123. (408) 629-8078.

25-27 July
ARCHON 10 (St. Louis area SF conference) at Clarion Hotel, St. Louis, Mo. Guest of Honor—Frederik Pohl, Artist Guest of Honor—Dell Harris, TM—Victor Milan. Registration—$20. Info: Archon, Box 50125, Clayton MO 63105.

9-10 August
MADNESS 86 (comics, gaming, and SF conference) at Middletown High School, Middletown, N.Y. Registration—$8 in advance, $10 at the door ($5.50/day), events—$2. Computer gaming. Info: Madness 86, 9 Sheffield Drive, Middletown NY 10940.

15-17 August
BABEL CON 8 (SF & Fantasy media conference) at Grand Rapids Hilton Inn, Grand Rapids, Mich. Special Guests—Rick Yagar (Buck Rogers comic strips) and Julia Ecklar (filksinger). Costume cantina. Registration—$15. Info: Babel Con 8, c/o Tim Eldred, 1265 Greenly, Hudsonville MI 49426. Include two legal-sized S.A.S.E. with registration.

15-17 August
SCORPIO IV at Hyatt Hotel, Oak Brook, Ill. Guest of Honor—Jan Chappel. Registration—$35 until 10 July, $40 at the door. Info: Nancy E. Kolar, Scorpio IV, Box 504, Berwyn IL 60402.

28 August-1 September 1986
CONFEDERATION (44th World Science Fiction Convention) at Atlanta, Georgia. Guest of Honor—Ray Bradbury, Fan Guest of Honor—Terry Carr, TM—Bob Shaw Registration—$25 supporting; $65 until 15 July 1986, more at the door. This is the SF universe's annual get-together. Professionals and readers from all over the world will be in attendance. Talks, panels, films, fancy dress competition, the works. Join now and get to nominate and vote for the Hugo awards and the John W. Campbell Award for Best New Writer. Info: ConFederation, Suite 1986, 3277 Roswell Road, Atlanta GA 30305.

—Anthony Lewis

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

SCIENCE FICTION BOOK CLUB

Take any 5 books for $1 with membership.

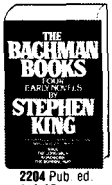
SEE OTHER SIDE FOR ADDITIONAL SELECTIONS.

★ **2378** Pub. ed. $14.95

5280 Pub. ed. $14.95

★ **2261** Pub. ed. $19.95

2444 Pub. ed. $18.95



2204 Pub. ed. $19.95

2139 Pub. ed. $15.95

1982 Pub. ed. $19.95

2410 Pub. ed. $14.95

2022 Doctor Who and the Deadly Assassin; Doctor Who and the Face of Evil; Doctor Who and the Robots of Death. Spec. ed.

2428 The Black Company; Shadows Linger; The White Rose. Spec. ed.

★ **1925 Spellsinger; The Hour of the Gate; The Day of the Dissonance.** Spec. ed.

0752 Elric of Melniboné; The Sailor on the Seas of Fate; The Weird of the White Wolf. Spec. ed.

1172 The Vanishing Tower; The Bane of the Black Sword; Stormbringer. Spec. ed.

0075 The First 5 Amber Novels. 2 vols. Comb. pub. ed. $32.30

Note: Prices shown are publishers' edition prices.
★ Explicit scenes and/or language may be offensive to some.

How the Club Works:

You'll receive your 5 books for only $1 (plus shipping and handling) after your application for membership is accepted. We reserve the right to reject any application. However, once accepted as a member, you may examine the books in your home and, if not completely satisfied, return them within 10 days at Club expense. Your membership will be cancelled and you'll owe nothing.

About every 4 weeks (14 times a year), we'll send you the Club's bulletin, *Things to Come*, describing the 2 coming Selections and a variety of Alternate choices. In addition, up to 4 times a year you may receive offers of special Selections, always at low Club prices. If you want the 2 Selections, you need do nothing; they'll be shipped automatically.

If you don't want a Selection, prefer an Alternate or no book at all, just fill out the convenient form always provided and return it to us by the date specified.

We allow you at least 10 days for making your decision. If you do not receive the form in time to respond within 10 days and receive an unwanted Selection, you may return it at our expense.

As a member you need buy only 4 books at regular low Club prices during the coming year. You may resign any time thereafter or continue to enjoy Club benefits for as long as you wish. One of the 2 Selections each month is only $4.98. Other Selections are higher, but always much less than hardcover publishers' editions—UP TO 65% OFF. The Club offers more than 400 books to choose from. A shipping and handling charge is added to all shipments. Send no money now, but do mail the coupon today!

SCIENCE FICTION BOOK CLUB®

Dept. BS-144, Garden City, N.Y. 11535

I want the best SF in or out of this world! Please accept my application for membership in the Science Fiction Book Club. Send me the 5 books I have numbered in the boxes below, and bill me just $1 (plus shipping and handling). I agree to the Club Plan as described in this ad. I will take 4 more books at regular low Club prices in the coming year and may resign any time thereafter. SFBC offers serious works for mature readers.

1.	2.	3.	4.	5.

Mr.
Ms. _____
(Please print)

Address _____ Apt. # _____

City _____

State _____ Zip _____

If under 18, parent must sign. _____

The Science Fiction Book Club offers its own complete hardbound editions sometimes altered in size to fit special presses and save you even more. Members accepted in U.S.A. and Canada only. Canadian members will be serviced from Canada. Offer slightly different in Canada. 38-S022

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

1743 Pub. ed. $16.95

1933 Pub. ed. $18.95

2220 Pub. ed. $16.95

Extensive travel to new lands... new planets and unexplored territories!

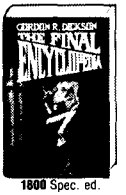
Require: Applicant for exclusive adventure club. Take on robots, dragons and dangerous aliens throughout the universe!

Equipment furnished.

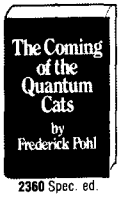
To Apply: Fill out the information on the reverse. You will receive the 5 adventures of your choice.

1883 Pub. ed. $17.95

2089 Spec. ed.



1800 Spec. ed.



2360 Spec. ed.

2352 Pub. ed. $17.95

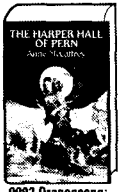
2451 Spec. ed.

2238 Pub. ed. $18.95

†2436 Spec. ed.

2188 Spec. ed.

1420 Includes the First, Second, and Third Books. Spec. ed.

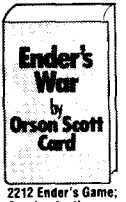


0992 Dragonsong; Dragonsinger; Dragondrums. Comb. pub. ed. $38.85

2105 Escape Velocity; The Warlock in Spite of Himself. Spec. ed.

2121 King Kobold Revived; The Warlock Unlocked; The Warlock Enraged. Spec. ed.

5520 The Sleeping Dragon; The Sword and the Chain; The Silver Crown. Spec. ed.



2212 Ender's Game; Speaker for the Dead. Comb. pub. ed. $29.90

Take any 5 books for $1
with membership.

See other side for coupon and additional Selections.

SCIENCE FICTION BOOK CLUB®

38-S022

Note: Prices shown are publishers' edition prices.

†Copyright © 1986 by Paramount Pictures Corporation.
STAR TREK is a Trademark of Paramount Pictures Corporation
Registered in the U.S. Patent and Trademark Office. All Rights Reserved.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED